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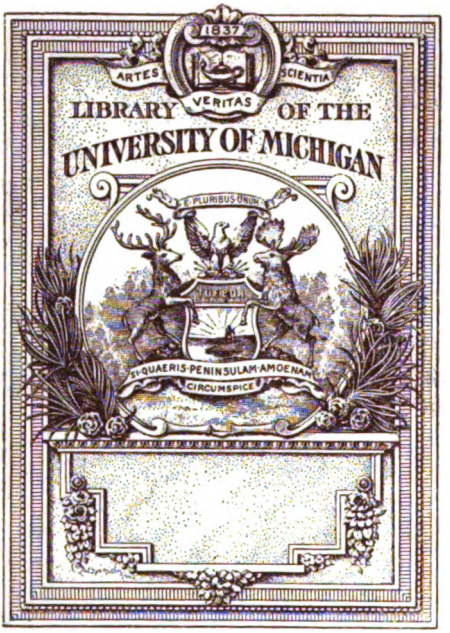

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THE PSYCHOLOGICAL CLINIC

A Journal for the Study and Treatment of Mental Retardation and Deviation

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Editor:
LIGHTNER WITMER, Ph. D.,
University of Pennsylvania.

VOLUME I.

1907-1908

THE PSYCHOLOGICAL CLINIC PRESS
PHILADELPHIA, PA.

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The Psychological Clinic

VOL. I. No. 1. MARCH 15, 1907.

CLINICAL PSYCHOLOGY.

BY LIGHTNER WITMER.

During the last ten years the laboratory of psychology at the University of Pennsylvania has conducted, under my direction, what I have called "a psychological clinic." Children from the public schools of Philadelphia and adjacent cities have been brought to the laboratory by parents or teachers; these children had made themselves conspicuous because of an inability to progress in school work as rapidly as other children, or because of moral defects which rendered them difficult to manage under ordinary discipline.

When brought to the psychological clinic, such children are given a physical and mental examination; if the result of this examination shows it to be desirable, they are then sent to specialists for the eye or ear, for the nose and throat, and for nervous diseases, one or all, as each case may require. The result of this conjoint medical and psychological examination is a diagnosis of the child's mental and physical condition and the recommendation of appropriate medical and pedagogical treatment. The progress of some of these children has been followed for a term of years.

To illustrate the operation of the psychological clinic, take a recent case sent to the laboratory from a city of Pennsylvania, not far from Philadelphia. The child was brought by his parents, on the recommendation of the Superintendent of Schools. Examination revealed a boy ten years of age, without apparent physical defect, who had spent four years at school, but had made so little progress that his ignorance of the printed symbols of the alphabet made it necessary to use the illiterate card to test his vision. Nothing in the child's heredity or early history revealed any ground for the suspicion of degeneracy, nor did the child's physical appearance warrant this diagnosis. The boy appeared to be of normal intelligence, except for the retardation in school work. The examination of the neurologist to whom he was sent, Dr. William G. Spiller, confirmed the absence of conspicuous mental degeneracy

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and of physical defect. The oculist, Dr. William C. Posey, found nothing more serious than a slight far-sighted astigmatism, and the examination of Dr. George C. Stout for adenoids, gave the child a clean bill of health, so far as the nose and pharynx were concerned. On the conclusion of this examination he was, necessarily, returned to the school from which he came, with the recommendation to the teacher of a course of treatment to develop the child's intelligence. It will require at least three months' observation to determine whether his present pedagogical retardation is based upon an arrest of cerebral development or is merely the result of inadequate methods of education. This case is unequivocally one for the psychologist.

My attention was first drawn to the phenomena of retardation in the year 1889. At that time, while a student of psychology at the University of Pennsylvania, I had charge of the English branches in a college preparatory school of Philadelphia. In my classes at this academy I was called upon to give instruction in English to a boy preparing for entrance to college, who showed a remarkable deficiency in the English language. His compositions seldom contained a single sentence that had been correctly formed. For example, there was little or no distinction between the present and the past tenses of verbs; the endings of many words were clipped off, and this was especially noticeable in those words in which a final ending distinguished the plural from the singular, or an adverb from an adjective. As it seemed doubtful whether he would ever be able to enter college without special instruction in English, I was engaged to tutor him in the English branches.

I had no sooner undertaken this work than I saw the necessity of beginning with the elements of language and teaching him as one would teach a boy, say, in the third grade. Before long I discovered that I must start still further back. I had found it impossible, through oral and written exercises, to fix in his mind the elementary forms of words as parts of speech in a sentence. This seemed to be owing to the fact that he had verbal deafness. He was quite able to hear even a faint sound, like the ticking of a watch, but he could not hear the difference in the sound of such words as *grasp* and *grasped*. This verbal deafness was associated with, and I now believe was probably caused by, a defect of articulation. Thus the boy's written language was a fairly exact replica of his spoken language; and he probably heard the words that others spoke as he himself spoke them. I therefore undertook to give him an elementary training in articulation to remedy the defects which are ordinarily corrected, through imitation, by the

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time a child is three or four years old. I gave practically no attention to the subjects required in English for college entrance, spending all my time on the drill in articulation and in perfecting his verbal audition and teaching him the simplest elements of written language. The result was a great improvement in all his written work, and he succeeded in entering the college department of the University of Pennsylvania in the following year.

In 1894-95, I found him as a college student in my classes at the University of Pennsylvania. His articulation, his written discourse and his verbal audition were very deficient for a boy of his years. In consequence he was unable to acquire the technical terminology of my branch, and I have no doubt that he passed very few examinations excepting through the sympathy of his instructors who overlooked the serious imperfections of his written work, owing to the fact that he was in other respects a fair student. When it came to the final examinations for the bachelor's degree, however, he failed and was compelled to repeat much of the work of his senior year. He subsequently entered and graduated from one of the professional departments of the University. His deficiencies in language, I believe, have never been entirely overcome.

I felt very keenly how much this boy was losing through his speech defect. His school work, his college course, and doubtless his professional career were all seriously hampered. I was confident at the time, and this confidence has been justified by subsequent experience with similar cases, that if he had been given adequate instruction in articulation in the early years of childhood, he could have overcome his defect. With the improvement in articulation there would have come an improved power of apprehending spoken and written language. That nothing was done for him in the early years, nor indeed at any time, excepting for the brief period of private instruction in English and some lessons in elocution, is remarkable, for the speech defect was primarily owing to an injury to the head in the second year of life, and his father was a physician who might have been expected to appreciate the necessity of special training in a case of retardation caused by a brain injury.

The second case to attract my interest was a boy fourteen years of age, who was brought to the laboratory of psychology by his grade teacher. He was one of those children of great interest to the teacher, known to the profession as a chronic bad speller. His teacher, Miss Margaret T. Maguire, now the supervising principal of a grammar school of Philadelphia, was at that time a student of psychology at the University of Pennsylvania;

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she was imbued with the idea that a psychologist should be able, through examination, to ascertain the causes of a deficiency in spelling and to recommend the appropriate pedagogical treatment for its amelioration or cure.

With this case, in March, 1896, the work of the psychological clinic was begun. At that time I could not find that the science of psychology had ever addressed itself to the ascertainment of the causes and treatment of a deficiency in spelling. Yet here was a simple developmental defect of memory; and memory is a mental process of which the science of psychology is supposed to furnish the only authoritative knowledge. It appeared to me that if psychology was worth anything to me or to others it should be able to assist the efforts of a teacher in a retarded case of this kind.

"The final test of the value of what is called science is its applicability" are words quoted from the recent address of the President of the American Association for the Advancement of Science. With Huxley and President Woodward, I believe that there is no valid distinction between a pure science and an applied science. The practical needs of the astronomer to eliminate the personal equation from his observations led to the invention of the chronograph and the chronoscope. Without these two instruments, modern psychology and physiology could not possibly have achieved the results of the last fifty years. If Helmholtz had not made the chronograph an instrument of precision in physiology and psychology; if Fechner had not lifted a weight to determine the threshold of sensory discrimination, the field of scientific work represented to-day by clinical psychology could never have been developed. The pure and the applied sciences advance in a single front. What retards the progress of one, retards the progress of the other; what fosters one, fosters the other. But in the final analysis the progress of psychology, as of every other science, will be determined by the value and amount of its contributions to the advancement of the human race.

The absence of any principles to guide me made it necessary to apply myself directly to the study of these children, working out my methods as I went along. In the spring of 1896 I saw several other cases of children suffering from the retardation of some special function, like that of spelling, or from general retardation, and I undertook the training of these children for a certain number of hours each week. Since that time the psychological clinic has been regularly conducted in connection with the laboratory of psychology at the University of Pennsylvania. The study of these cases has also formed a regular part of the instruction offered to students in child psychology.

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In December, 1896, I outlined in an address delivered before the American Psychological Association a scheme of practical work in psychology. The proposed plan of organization comprised:

1. The investigation of the phenomena of mental development in school children, as manifested more particularly in mental and moral retardation, by means of the statistical and clinical methods.

2. A psychological clinic, supplemented by a training school in the nature of a hospital school, for the treatment of all classes of children suffering from retardation or physical defects interfering with school progress.

3. The offering of practical work to those engaged in the professions of teaching and medicine, and to those interested in social work, in the observation and training of normal and retarded children.

4. The training of students for a new profession—that of the psychological expert, who should find his career in connection with the school system, through the examination and treatment of mentally and morally retarded children, or in connection with the practice of medicine.

In the summer of 1897 the department of psychology in the University of Pennsylvania was able to put the larger part of this plan into operation. A four weeks' course was given under the auspices of the American Society for the Extension of University Teaching. In addition to lecture and laboratory courses in experimental and physiological psychology, a course in child psychology was given to demonstrate the various methods of child psychology, but especially the clinical method. The psychological clinic was conducted daily, and a training school was in operation in which a number of children were under the daily instruction of Miss Mary E. Marvin. At the clinic, cases were presented of children suffering from defects of the eye, the ear, deficiency in motor ability, or in memory and attention; and in the training school, children were taught throughout the session of the Summer School, receiving pedagogical treatment for the cure of stammering and other speech defects, for defects of written language (such as bad spelling), and for motor defects.

From that time until the present I have continued the examination and treatment of children in the psychological clinic. The number of cases seen each week has been limited, because the means were not at hand for satisfactorily treating a large number of cases. I felt, also, that before offering to treat these children on a large scale I needed some years of experience and extensive study, which could only be obtained through the pro-

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longed observation of a few cases. Above all, I appreciated the great necessity of training a group of students upon whose assistance I could rely. The time has now come for a wider development of this work. To further this object and to provide for the adequate publication of the results that are being obtained in this new field of psychological investigation, it was determined to found this journal, *The Psychological Clinic.*

My own preparation for the work has been facilitated through my connection as consulting psychologist with the Pennsylvania Training School for Feeble-Minded Children at Elwyn, and a similar connection with the Haddonfield Training School and Miss Marvin's Home School in West Philadelphia.

Clinical psychology is naturally very closely related to medicine. At the very beginning of my work I was much encouraged by the appreciation of the late Provost of the University of Pennsylvania, Dr. William Pepper, who at one time proposed to establish a psychological laboratory in connection with the William Pepper Clinical Laboratory of Medicine. At his suggestion, psychology was made an elective branch in what was then the newly organized fourth year of the course in medicine. At a subsequent reorganization of the medical course, however, it was found necessary to drop the subject from the curriculum.

I also desire to acknowledge my obligation to Dr. S. Weir Mitchell for co-operation in the examination of a number of cases and for his constant interest in this line of investigation. I have also enjoyed the similar co-operation of Dr. Charles K. Mills, Dr. William G. Spiller, the late Dr. Harrison Allen, Dr. Alfred Stengel, Dr. William Campbell Posey, Dr. George C. Stout, and Dr. Joseph Collins, of New York. Dr. Collins will continue this co-operation as an associate editor of *The Psychological Clinic.*

The appreciation of the relation of psychology to the practice of medicine in general, and to psychiatry in particular, has been of slow growth. The first intelligent treatment of the insane was accorded by Pinel in the latter part of the eighteenth century, a century that was marked by the rapid development of the science of psychology, and which brought forth the work of Pereire in teaching oral speech to the deaf, and the "Emile" of Rousseau. A few medical men have had a natural aptitude for psychological analysis. From them has come the chief development of the medical aspects of psychology,—from Seguin and Charcot in France, Carpenter and Maudsley in England, and Weir Mitchell in this country. Psychological insight will carry the physician or teacher far on the road to professional achievement, but at the present day

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the necessity for a more definite acquaintance with psychological method and facts is strongly felt. It is noteworthy that perhaps the most prominent name connected with psychiatry to-day is that of Kraepelin, who was among the first to seek the training in experimental psychology afforded by the newly established laboratory at Leipzig.

Although clinical psychology is closely related to medicine, it is quite as closely related to sociology and to pedagogy. The school room, the juvenile court, and the streets are a larger laboratory of psychology. An abundance of material for scientific study fails to be utilized, because the interest of psychologists is elsewhere engaged, and those in constant touch with the actual phenomena do not possess the training necessary to make their experience and observation of scientific value.

While the field of clinical psychology is to some extent occupied by the physician, especially by the psychiatrist, and while I expect to rely in a great measure upon the educator and social worker for the more important contributions to this branch of psychology, it is nevertheless true that none of these has quite the training necessary for this kind of work. For that matter, neither has the psychologist, unless he has acquired this training from other sources than the usual course of instruction in psychology. In fact, we must look forward to the training of men to a new profession which will be exercised more particularly in connection with educational problems, but for which the training of the psychologist will be a prerequisite.

For this reason not a small part of the work of the laboratory of psychology in the University of Pennsylvania for the past ten years has been devoted to the training of students in child psychology, and especially in the clinical method. The greater number of these students have been actively engaged in the profession of teaching. Important contributions to psychology and pedagogy, the publication of which in the form of monographs has already been begun, will serve to demonstrate that original research of value can be carried on by those who are actively engaged in educational or other professional work. There have been associated in this work of the laboratory of psychology, Superintendent Twitmyer, of Wilmington; Superintendent Bryan, of Camden; District Superintendent Cornman, of Philadelphia; Mr. J. M. McCallie, Supervising Principal of the Trenton Schools; Mr. Edward A. Huntington, Principal of a Special School in Philadelphia; Miss Clara H. Town, Resident Psychologist at the Friends' Asylum for the Insane, and a number of special teachers for the blind, the deaf,

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and mentally deficient children. I did not venture to begin the publication of this journal until I felt assured of the assistance of a number of fellow-workers in clinical psychology as contributors to the journal. As this work has grown up in the neighborhood of Philadelphia, it is probable that a greater number of students, equipped to carry on the work of clinical psychology, may be found in this neighborhood than elsewhere, but it is hoped that this journal will have a wider influence, and that the co-operation of those who are developing clinical psychology throughout the country will be extended the journal.

The phraseology of "clinical psychology" and "psychological clinic" will doubtless strike many as an odd juxtaposition of terms relating to quite disparate subjects. While the term "clinical" has been borrowed from medicine, clinical psychology is not a medical psychology. I have borrowed the word "clinical" from medicine, because it is the best term I can find to indicate the character of the method which I deem necessary for this work. Words seldom retain their original significance, and clinical medicine, is not what the word implies,—the work of a practicing physician at the bedside of a patient. The term "clinical" implies a method, and not a locality. When the clinical method in medicine was established on a scientific basis, mainly through the efforts of Boerhaave at the University of Leiden, its development came in response to a revolt against the philosophical and didactic methods that more or less dominated medicine up to that time. Clinical psychology likewise is a protestant against a psychology that derives psychological and pedagogical principles from philosophical speculations and against a psychology that applies the results of laboratory experimentation directly to children in the school room.

The teacher's interest is and should be directed to the subjects which comprise the curriculum, and which he wishes to impress upon the minds of the children assigned to his care. It is not what *the child is,* but *what he should be taught,* that occupies the center of his attention. Pedagogy is primarily devoted to mass instruction, that is, teaching the subjects of the curriculum to classes of children without reference to the individual differences presented by the members of a class. The clinical psychologist is interested primarily in the individual child. As the physician examines his patient and proposes treatment with a definite purpose in view, namely the patient's cure, so the clinical psychologist examines a child with a single definite object in view,—the next step in the child's mental and physical development. It is here that the relation between science and practice becomes worthy of

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discrimination. The physician *may* have solely in mind the cure of his patient, but if he is to be more than a mere practitioner and to contribute to the advance of medicine, he will look upon his efforts as an experiment, every feature of which must indeed have a definite purpose,—the cure of the patient,—but he will study every favorable or unfavorable reaction of the patient with reference to the patient's previous condition and the remedial agents he has employed. In the same way the purpose of the clinical psychologist, as a contributor to science, is to discover the relation between cause and effect in applying the various pedagogical remedies to a child who is suffering from general or special retardation.

I would not have it thought that the method of clinical psychology is limited necessarily to mentally and morally retarded children. These children are not, properly speaking, abnormal, nor is the condition of many of them to be designated as in any way pathological. They deviate from the average of children only in being at a lower stage of individual development. Clinical psychology, therefore, does not exclude from consideration other types of children that deviate from the average—for example, the precocious child and the genius. Indeed, the clinical method is applicable even to the so-called normal child. For the methods of clinical psychology are necessarily invoked wherever the status of an individual mind is determined by observation and experiment, and pedagogical treatment applied to effect a change, *i. e.*, the development of such individual mind. Whether the subject be a child or an adult, the examination and treatment may be conducted and their results expressed in the terms of the clinical method.

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AN INFANTILE STAMMER ("BABY-TALK") IN A BOY OF TWELVE YEARS.

By Clara Harrison Town.

Resident Psychologist at Friends' Asylum for the Insane, Frankford.

In April, 1905, a boy of twelve years of age was entered in a special school of Philadelphia and placed in a class for backward boys, of which I was then in charge.

It was my practice to subject each boy, brought for training, to a thorough examination in order to ascertain, if possible, the physical or mental condition which was the primary cause of his backwardness. If I succeeded in discovering this underlying cause of retardation I concentrated all my pedagogical efforts on the task of training the function or functions which showed inadequate development.

This boy had been unable to make normal progress in the regular schools owing primarily to a speech defect. Articulation was so imperfect as to make it quite impossible for me to understand a single word of his conversation. In addition to this defect of oral language, he manifested an equally severe defect of written language—a total inability to spell. His attempts at the writing of words produced a quite unintelligible result. Letters were grouped together in absolutely meaningless fashion, showing a lack of appreciation of the elementary sounds of words and a total deficiency of memory for the sequence of their visual symbols, *i. e.*, written letters. His spelling papers were, in addition, most carelessly prepared; words and letters were crossed out and written over, and there was no attempt at an orderly arrangement of the words on the page.

In no other way did he manifest retardation; he was quick at grasping ideas and noticeably active and alert in the general life of the school. His mother, on whom I called in order to gain some insight into his history, told me that she thought his defective speech was due to prolonged "baby-talk." In this opinion she claimed that she was upheld by their physician, who informed her that the boy would outgrow his speech defect in time. The mother also told me that her boy had never been allowed to mingle much with the boys of the neighborhood. She prided herself on having watched most carefully over him. She had encouraged him in his babyish ways and continued to talk to him in "baby-talk" long after the period when this inadequate mode of speech should have been

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outgrown. It evidently was one of the many cases where a devoted but unwise mother, through over-indulgence and the desire to keep her child a baby, had almost ruined his chances for a useful and possibly successful career in life.

I therefore considered his defect of articulation to be the result of a persistent infantile habit in no way dependent upon either an anatomical, a physiological or a mental defect. As such it might be corrected, although the fact that it was of such long standing warranted the opinion that the training process would be a most tedious one. Infantilism of speech leads to infantilism in other forms of language, and I attributed to the same cause his inability to associate the elementary sounds of language with the forms of letters, as shown by his deficiency in spelling and reading.

As the first step in his training in correct modes of articulation I made an examination to ascertain his exact status, so far as articulatory capacity was concerned, following for the purpose a method recommended by Dr. Witmer. The pupil is first tested in the pronunciation of each consonant and vowel sound as nearly as may be in isolation. Then each consonant and vowel sound is given as the initial and final sound of a syllable, as, for instance, *b* in *ba* and *ab, bo* and *ob,* etc.; the endeavor is made to have the pupil repeat the syllabic combinations of each elementary sound. Then words are taken in which each sound occurs as the initial or final element, for example, *b* in *bird* and *rob;* next the sound is given in the middle of a word, either at the beginning or end of a syllable as *b* in *robin,* or in the middle of the syllable as *b* in *daubed* or *robbed.* The last stage of the examination requires the observation and an exact estimation of the accuracy with which the elementary sounds are employed in ordinary discourse.

A list of words prepared for the purpose and comprising all the consonant and vowel sounds in the several combinations is used in making the tests. The accuracy of the pupil in general discourse is determined from a close observation of the child's ordinary conversation while he himself is entirely unconscious of being observed.

The results of the examination are recorded on blanks or test cards prepared for the purpose. On these cards, as may be seen by reference to the tables (which are the blanks filled in) accompanying this report, pages 13 and 18, the letters representing the various elementary sounds are placed in a column at the left of the table; in blank spaces to the right of each letter are entered marks representing the grade of the child's capacity in the articu-

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lation of each elementary sound in each of the several combinations indicated at the head of the vertical columns. Five grades of capacity are employed, ranging from 1 to 5; the highest grade, or 5, indicates a practically perfect articulation of the sound represented by the symbol to which it is attached in the table. If the child is totally unable to produce the sound, the mark 0 is recorded on the card. These cards are not only employed before the articulation exercises begin, to ascertain the child's status; they are filled in at stated intervals after training in articulation has resulted in some progress, to determine by means of comparison between later and earlier records the exact amount of progress that has been attained.

I can best illustrate my pupil's status when he came to me by reference to the record of his first examination in articulation, the cards for which are dated April 6, 1905. The record is contained on two cards (combined into a single table on page 13), one for the twenty-five consonants and one for the twenty vowels and diphthongs, recognized as the articulate elements of the English language. By referring to the first two vertical columns of the table, the column of consonant symbols and the one headed "element," it will be seen that he was given the grade 5 for the articulation of the sounds of *b, t, w, f, m, n,* and *ng,* a total of but seven elements, when these elements were not combined with other elements to form syllables or words. The grade of 5 means that he could articulate, after me, the respective sound with approximate perfection. The sound of *v, sh, ch,* and *j,* four elements, he pronounced, also through imitation, well enough to secure the grade 4.

He could not, however, pronounce these sounds voluntarily, as for example, if the written or printed letter were pointed to and he were asked to give its sound. The difficulty here, of course, was in the association of the particular sound and articulatory movements with the visual letter form, rather than in articulation proper.

After the articulation of these sounds as separate elements, I tried him with the sounds in combination. With every increase in complexity of combination his articulation grew more imperfect. This may be seen by comparing the grades assigned each of these eleven sounds in the two columns under the heading "syllable" with the grade assigned in the column of "elements." The sounds *sh* and *ch,* which he had imitated well enough in isolation, he completely failed to give when combined with a single vowel, even though the sound were the initial one of a syllable. The sounds of *b, w, f, j, m,* and *n* were pronounced as the initial

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ARTICULATION RECORD, APRIL 6, 1905

Consonants	Element	Syllable		Words				Discourse			
		Beginning	End	Beginning	Middle: Beginning or End of Syl.	Middle: Middle of Syllable	End	Beg. of Words	Mid. of Words: Beginning or End of Syl.	Mid. of Words: Middle of Syllable	End of Words
1. p	0	0	3	0	3	0	1	1	1	0	0
2. b	5	5	2	5	5	0	1	5	1	0	0
3. t	5	4	2	4	1	1	1	4	1	1	1
4. d	0	1	0	3	0	0	0	3	0	0	0
5. k	0	0	0	0	1	0	0	0	1	0	0
6. g	1	0	0	0	0	0	0	0	0	0	0
7. wh-white	0	0	—	0	0	—	—	0	0	—	—
8. w	5	5	—	5	3	0	—	4	1	0	—
9. f	5	5	2	5	0	0	0	5	0	0	0
10. v	4	1	3	0	0	0	0	0	0	0	0
11. th-thin	0	0	0	0	0	0	0	0	0	0	0
12. dh-then	0	0	0	0	0	0	0	0	0	0	0
13. s	0	0	1	0	0	0	0	0	0	0	0
14. z	0	0	2	1	0	0	0	0	0	0	0
15. sh-she	4	0	0	0	0	0	0	0	0	0	0
16. zh-azure	0	0	0	0	0	0	0	0	0	0	0
17. y	0	4	—	0	0	—	—	0	0	—	—
18. h	1	0	—	0	0	—	—	0	0	—	—
19. ch-chain	4	0	0	0	0	0	2	0	0	0	0
20. j	4	4	4	4	0	0	2	1	0	0	0
21. m	5	5	0	1	5	0	0	1	0	0	0
22. n	5	5	5	4	0	0	4	4	2	0	4
23. ng	5	—	3	—	2	1	3	—	1	1	3
24. l	0	0	0	0	0	0	0	0	0	0	0
25. r	0	0	0	0	0	0	0	0	0	0	0

Vowels	Element	Syllable		Words			
		Beginning	End	Beginning	Middle: Beginning or End of Syl.	Middle: Middle of Syllable	End
1. i-eve	5	5	5	5	5	5	5
2. i-tin	2	2	2	3	—	1	5
3. e-pray	5	5	5	5	5	5	—
4. e-pen	3	4	0	4	—	1	—
5. a-air	1	2	0	1	—	1	4
6. a-at	4	4	4	4	4	2	4
7. a-arm	5	3	5	3	5	4	0
8. a-chant	5	5	5	5	0	0	4
9. o-law	5	5	5	5	5	1	5
10. o-not	5	4	4	4	4	5	3
11. o-note	5	4	5	2	5	3	—
12. o-obey	5	1	5	5	0	—	0
13. u-curl	3	2	3	1	—	0	0
14. u-but	1	1	3	1	—	0	5
15. u-rule	5	5	5	5	5	5	4
16. u-full	1	5	4	1	—	4	4
17. ai-I	5	1	5	1	5	4	4
18. au-out	2	0	1	0	0	0	0
19. oi-coil	5	3	4	3	3	0	2
20. iu-few	4	4	0	0	0	0	0

REMARKS—The columns under "Discourse" are omitted as it is impossible to estimate exactly the accuracy of vowel pronunciation in general conversation.

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elements of a syllable with the same degree of perfection as they were in isolation, but *t* and *v* were pronounced less perfectly. As the final element of a syllable all these eleven sounds are less correctly given, with the exception of *j* and *n*. The only element to secure the grade 5, as a final sound in a syllable was *n*.

By referring to the columns under the heading "words," it is possible to obtain the rating for each consonantal sound at the beginning of a word, in the middle of a word (either at the beginning or end of a syllable or in the middle of a syllable) and at the end of a word. The words chosen as test words were the simplest ones I could find containing the various sound combinations. Nevertheless the record of his efforts at their articulation showed a marked reduction in capability over the barely more simple combinations of these elements in syllables. The only sounds given a grade 5 as initial sounds were *b*, *w*, and *f*; as finals the highest grade secured was 4 given for the articulation of *n*, whereas the grade 3 was given for *ng*, 2 for *ch* and *j*, and 1 for *p*, *b*, and *t*. All but these seven final consonants could not be pronounced at all.

It will be observed that even in the column of elements, where the sound is to be given uncombined with other sounds, that 0 predominates as the grade attained; thus he was entirely unable to imitate the sound of *p*, *d*, *k*, *wh*, *th*, *dh*, *s*, *z*, *zh*, *y*, *l*, and *r*. These he had evidently never attempted to articulate. When his training began—and the training in articulation really begins through the testing which is necessary to fill out the record card—it was found that the boy had to be taught how to place his lips, tongue, and teeth in order to pronounce most of the elementary sounds of what could be called only by courtesy his "mother tongue."

In the several columns under the heading "discourse" are entered the grades assigned for the articulation of sounds as these were given in ordinary conversation. It was, of course, difficult to observe and estimate the value of the articulation of most of these sounds. It required prolonged observation. It appeared that the only consonant sounds which he employed perfectly in ordinary conversation were *b* and *f* as initial sounds. In the same position *t*, *w*, and *n* were assigned the grade 4, and *d* was marked 3. As final sounds, no consonant is assigned the grade 5; *n* is marked 4; *ng* 3. In the middle of words, the highest grade assigned was 2 for *n*. Four other sounds, *p*, *k*, *j*, and *m*, were marked 1 in at least one position. No consonant sounds other than these eleven were ever heard in his ordinary conversation.

In pronouncing a word his habit was to make an attempt to give the principal vowel sound, leaving out most of the conso-

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nants and slurring the few that he employed to represent the real sounds of the word. Thus "seven" was *ewy;* "bear," "there" and "pair" were all *ai*(r) (without the r); "sight" was *I;* "do" was *oo; v* and *r* were always *w; p* was usually *b;* and *k* was *t.* Final consonants with the exception of *n* and *ng* were always omitted.

The vowel card presents a better record. He was able to imitate with varying success all vowel and diphthong sounds in isolation, securing the grade of 5 for *i* (as in eve), *e* (prey), *a* (arm), *a* (chant), *o* (law), *o* (not), *o* (note), *o* (obey), *u* (rule), *ai* (aisle), and *oi* (coin). He experienced greatest difficulty with *a* (air), *u* (but), *u* (full), and *au* (out). As with the consonants, his difficulty was greatly increased by even the simplest combinations. Although *i* (eve), *e* (prey), and *u* (rule) were pronounced perfectly in all combinations, the other sounds were more and more slurred and confused one with another as the combinations increased in complexity. It was impossible to make an accurate estimate of the pronunciation of the vowels in ordinary conversation; for that reason no entries were made on the record card for vowels under the heading "discourse," and these columns have been omitted from the table.

After two months training, the boy was able to articulate clearly every sound in isolation. There was, however, little or no improvement, as yet, in pronunciation when the elementary sounds were combined to form syllables and words. It was necessary to make each combination the subject of special drill, and when, after days, or perhaps weeks, of effort, the approximately correct articulation was at length accomplished, its production was a veritable triumph. He would succeed in producing correctly a consonant sound in all the required positions when combined with one vowel sound and yet fail utterly to produce it when syllables or words were substituted in which it was combined with other vowel sounds. I, therefore, found it necessary, for the drill in each consonant and digraph, to draw up lists of short words containing that element first as initial and then as final sound in combination with each vowel and diphthong, omitting only those combinations of which I failed to find examples. For the purpose of training the pupil to put to practical use the correct articulation of each element as it was acquired, I supplemented the word drill on each consonant by drill in reading one or more short sentences containing words in which the element occurred as initial, middle and final sound. After the boy had succeeded fairly well with a consonant as presented in the word and sentence drill, I passed on to the next, but reviewed each day all the sentences in which he had

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previously been trained and also any special combinations which were still imperfectly produced. I endeavored in this way to fix firmly in mind the newly acquired mode of articulation, and to counteract the strong tendency to return to the habitual and, therefore, easier mode of articulation.

As spelling lessons, I assigned the words of the practice sentences, in the sounds of which he had been thoroughly drilled, and with the appearance of which he had necessarily grown familiar, as the sentence in written form was kept constantly before him during his articulation drill. Great improvement in spelling was at once manifest. His memory images of words had, in all probability, always been far too hazy to serve as models from which to copy; now they were more definite and clear and he was able to transfer them to paper. With accuracy of thought had come accuracy of execution.

By June, 1906, he was able to read all of the practice sentences with a fair degree of fluency. Some of the sounds were exaggerated and others not quite clear, but all the words were quite intelligible. He was also able to write from dictation nearly all the words contained in the sentences. Spelling was still very difficult for him and he learned new words only with great effort and time, but he made an intelligent attempt and finally succeeded.

It was also evident by this date that the articulation training had developed in the boy a power of still more far-reaching value than the increased control over oral and written language. Inseparably bound up with articulation training is a most intensive training of the attention. The boy had been compelled to pay undivided attention to the proper placing of his lips, tongue and teeth in order to produce the sounds at all; he had also been compelled to attend strictly to the sounds that he heard, when such articulated movements of the organs of speech were made, in order that he might recognize from the sound of a word what particular movements of articulation he was expected to make. The daily twenty minutes of articulation drill had performed for this boy the most important office of elementary education; it had developed in him the power of concentration of attention and thought. It had, through forcing him to concentrate on certain sensations, not only developed in him control of the articulatory movements, but it had also taught him the method by which to gain control of all bodily movements.

This increased mental and muscular control was very manifest in the appearance of his spelling papers. Instead of carelessly written sheets crowded with erasures and unfinished attempts at

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words, the papers were now neatly arranged and the words carefully written.

. On June 16, 1906, I again examined him as at first, using the same test words. I present on page 18 a copy of this articulation record. On the consonant card, the grade 5 was assigned for all sounds and combinations except *th* (thin), occurring in the middle of a word, for which 3 was given, and *t, dh, ch,* and *j* occurring in the middle of a syllable of a word, which were marked *t* 4, *dh* 0, *ch* 3, and *j* 3. On the vowel card, the grade 5 was given for all sounds except initial *oi,* which was marked 4, and *oi* as a middle sound of a word, which was marked 3. The remarkable progress that he had made in a year and two months, about twelve months of actual training, may be seen by comparing the results of this test with those obtained in the test of April, 1905, presented in the table on page 13.

There was, however, no improvement to be observed in his general discourse; therefore this column is omitted from the table on page 18. In spite of the long continued drill, crowned with a fair measure of success, the boy was practically little better off than before. He, as yet, had not made the slightest attempt to apply his newly acquired ability in conversation. His speech was quite as unintelligible as it had been one year earlier.

I have not had charge of the class since this test was made in June, 1906, and the lessons in articulation have been discontinued. On February 26, 1907, however, I visited the school and again examined the boy, using the same test words as before. The results are presented on the right half of the table on page 18. I found that very little had been lost in the way of acquired control. He had relapsed into some of his old habits and forgotten the association of certain sounds with the corresponding letters, but hearing the sound given correctly several times was enough to set him right again. I feel confident that the ground lost would soon be recovered if the lessons were resumed. In order to test his present ability to write the words which he had formerly been able to write from dictation, I dictated thirty-three words from the practice sentences. Sixteen of these he spelled correctly. Of the seventeen misspelled, five were omitted entirely, five showed that the sound of the word conveyed to him no idea of its written form, and a more or less intelligent attempt was made to write the remaining seven.

This spelling test revealed several peculiarities in the boy's associative memory for words, which are of some psychological interest. The words "table" and "tube" had been associated to-

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ARTICULATION RECORD

Consonants and Vowels	June 16, 1906							February 26, 1907.						
		Syllable		Words					Syllable		Words			
					Middle							Middle		
	Element	Beginning	End	Beginning	Beginning or End of Syllable	Middle of Syllable	End	Element	Beginning	End	Beginning	Beginning or End of Syllable	Middle of Syllable	End
1. p	5	5	5	5	5	5	5	5	5	5	5	5	4	5
2. b	5	5	5	5	5	5	5	5	5	5	5	5	2	5
3. t	5	5	5	5	5	4	5	5	5	5	5	5	5	5
4. d	5	5	5	5	5	5	5	5	5	5	5	5	0	5
5. k	5	5	5	5	5	5	5	4	5	4	5	1	0	4
6. g	5	5	5	5	5	5	5	5	0	5	0	0	0	5
7. wh-white	5	5	—	5	5		—	5	5	—	5	5	—	—
8. w	5	5	—	5	5	5	—	5	5	—	5	5	5	—
9. f	5	5	5	5	5	5	5	5	5	5	5	5	4	5
10. v	5	5	5	5	5	5	5	5	4	5	4	4	5	5
11. th-thin	5	5	5	5	3	3	5	5	3	5	3	4	0	5
12. dh-then	5	5	5	5	5	0	5	5	5	5	5	5	2	5
13. s	5	5	5	5	5	5	5	4	5	5	5	5	5	5
14. z	5	5	5	5	5	5	5	5	2	5	2	1	0	5
15. sh-she	5	5	5	5	5	5	5	5	5	5	5	1	1	5
16. zh-azure	5	5	5	—	5	—	5	5	5	5	—	5	—	5
17. y	5	5	—	5	5	—	—	5	5	—	5	3	—	—
18. h	5	5	—	5	5	—	—	5	4	—	4	2	—	—
19. ch-chain	5	5	5	5	5	3	5	5	5	5	5	5	0	5
20. j	5	5	5	5	5	3	5	5	4	5	4	5	2	5
21. m	5	5	5	5	5	5	5	5	5	5	5	5	5	5
22. n	5	5	5	5	5	5	5	5	5	5	5	5	5	5
23. ng	5	—	5	—	5	5	5	5	—	5	—	5	5	5
24. l	5	5	5	5	5	5	5	4	3	5	3	5	3	5
25. r	5	5	5	5	5	5	5	4	3	5	3	0	5	5
1. i-eve	5	5	5	5	5	5	5	5	5	5	5	0	5	5
2. i-tin	5	5	5	5	—	5	—	5	5	5	5	—	4	—
3. e-prey	5	5	5	5	5	5	5	5	5	5	5	5	5	5
4. e-pen	5	5	5	5	—	5	—	5	5	5	5	—	5	—
5. a-air	5	5	5	5	—	5	—	4	5	5	5	—	5	—
6. a-at	5	5	5	5	5	5	5	5	5	5	5	5	5	5
7. a-arm	5	5	5	5	5	5	5	5	5	5	5	5	5	5
8. a-chant	5	5	5	5	5	5	—	5	5	5	5	5	5	—
9. o-law	5	5	5	5	5	5	5	5	5	5	5	5	5	5
10. o-not	5	5	5	5	5	5	—	5	4	5	4	4	5	—
11. o-note	5	5	5	5	5	5	5	5	5	5	5	5	5	5
12. o-obey	5	5	5	5	5	—	5	5	4	4	4	4	—	4
13. u-curl	5	5	5	5	—	5	—	5	5	5	5	—	5	—
14. u-but	5	5	5	5	—	5	—	5	5	5	5	—	5	—
15. u-rule	5	5	5	5	5	5	5	5	5	5	5	5	5	5
16. u-full	5	5	5	5	—	5	—	5	5	5	5	—	5	—
17. ai-I	5	5	5	5	5	5	5	1	5	5	5	5	5	5
18. au-out	5	5	5	5	5	5	5	5	4	5	4	5	4	5
19. oi-coil	5	5	5	4	3	5	5	5	2	5	2	2	5	5
20. iu-few	5	5	5	5	5	5	5	5	5	5	5	5	5	5

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gether in the sentence, "The tube is on the table," which I had formerly used in drilling him in the sound of initial *t*. I dictated the word "tube"; he wrote "tuble." I then asked for the word "table," which he wrote correctly. I followed this by a second request for "tube," and this time he wrote, first, "tubl," and finally, as the result of a second attempt, "tube." "Tube" and "table" had become confused in his memory. There was no clear distinction between the visual memory images of the two words. The auditory images of the two words were also confused in his memory, the sound of the word "tube" had become associated with the written form "tube" and also with the written form "table," which he had learned to recognize at about the same time. His discrimination of sound is evidently not yet keen enough to enable him to determine which written form (tube, or table, or a mixed form) should be used to represent the spoken word, and there is nothing to determine his choice but the chance association of words in his past experience. The sounds of the words in the sentence, "The tube is on the table" and the written symbols representing these words have become closely associated in his memory, as the result of being repeatedly experienced together, and this associative connection is much more definite than the association of the discrete sounds with the individual written words, notwithstanding the fact that he was drilled long on the separate words before the sentence was attempted. The explanation is found in the fact that he has only lately begun to form definite associations between sounds and written symbols, while the association of experiences coexisting in time and place has been a lifelong habit with him.

His great dependence upon such chance contiguity associations is also indicated by the fact that when I dictated "rain," he wrote "water," a word which he had in all probability learned in connection with a lesson on "rain"; and also by the fact that when I dictated a word that failed to call up in his memory its written form, he wrote down a succession of symbols that bore no relation whatever to the sound of the word; thus, "found" was started with *k*, and roof with *l*.

The results, as a whole, indicate that it is quite within the range of possibility to train this boy to the point where his speech defect will entirely disappear; but also that it is quite impossible to do so under the existing conditions. The maximum time that could be devoted in the special school to his articulation training is twenty minutes daily, five days of the week; the rest of the time his old habits hold full sway, and grow steadily

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stronger with practice. Even in school, at times other than the period devoted to him, the teacher cannot take the time of the class to insist on careful pronunciation. If, however, I could have this boy under constant supervision for some extended period of time and were thus enabled to check every tendency to revert to the infantile mode of speech by making all his pleasures and needs depend upon an earnest effort to make his speech intelligible, I feel that his defect could be overcome and he could continue his life without this heavy handicap.

This case is one of those for the training of which constant supervision is required. They can never be dealt with successfully by the public school system until we have parental schools—schools in which children may be given temporary home care as well as instruction, schools in which children, whose home life and general environment are such as to nullify all the efforts of the day school, may live long enough to form mental and moral habits that may change the whole tenor of their lives.

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A JUVENILE DELINQUENT.

By Edward A. Huntington,
Principal of Special School No. 3, Philadelphia.

On January 8, 1906, Andrew Boyd,[1] a boy of eleven years, was transferred, on account of persistent truancy, from a Philadelphia primary school to Special School No. 3, of which I am principal.

Physically the boy was in bad condition. He was poorly nourished; his open mouth and general physiognomy gave rise to the suspicion of the existence of adenoids. An examination by the school physician revealed both enlarged tonsils and adenoid growths in the naso-pharynx. A deep scar on the skull and the absence of one of his fingers bore testimony to some severe injury in the past.

Mentally, Andrew was retarded or "backward" in development. Although he was eleven years of age, it was necessary to place him in a class doing the work of the second school year. His mental deficiency was due not only to pedagogical retardation, but also, at least in part, to a physiological arrest of development affecting chiefly the brain. This may have resulted from the presence of the adenoids.

Andrew's reputation for playing truant was well founded. He was absent the second and fourth days after registration. From January 8th to March 8th he was present but thirteen school sessions out of a total of forty-three. When he appeared at school he was usually accompanied by his mother, who would conclude a rambling and profuse explanation of the boy's previous absence from school by requesting for trivial reasons that he be dismissed on that day one, two, or even three hours early. The requests, however, were unnecessary, for seldom did he remain throughout the entire session. At some moment when his teacher's attention was occupied, or during the recess periods, Andrew found a way for stealing out.

Some time after Andrew's admission to the school Mr. Boyd began to manifest an interest in his son's condition. Several times he brought him to school. On a number of these occasions Andrew left his father at the front door, passed around the building as if to enter by the boy's entrance, climbed the rear fence, and disappeared.

[1] This name has been chosen to conceal the boy's identity.

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Mr. Boyd volunteered the information that he was most unfortunate in his home life, owing to the habits of his wife. He advised me not to listen to her, and claimed that owing to his wife's neglect of her duties, the result of drunkenness, it was impossible for him to do what was best for his boy. Home neglect could be inferred from the untidy appearance of both mother and boy, and especially from the odor of the boy's clothing. The mother's appearance, as well as that of the boy, seemed to bear out the father's accusation.

It seemed to me that the first step in the treatment of Andrew's truancy was the removal of the adenoids with which he was afflicted. I therefore endeavored to explain to Mrs. Boyd the partial dependence of her child's condition upon the naso-pharyngeal obstruction. I told her that before we could begin to restore him to a normal mental and moral condition it would be necessary to perform a slight operation upon his nose and throat to remove certain growths there which obstructed his breathing and retarded his physical and mental development. I advised her to allow me to send Andrew to a hospital, where a medical specialist would make an examination, and, if it proved to be necessary, his naso-pharynx could be operated upon. I offered to relieve her of all care in the matter if she and her husband would merely consent to the proper treatment. Mrs. Boyd appeared willing, but her husband refused. I am confident that the subsequent history of this boy would have been very different if the school authorities had had sufficient authority to act effectively at this point. As it was, the moral situation had to become acute before the first step was taken to apply the proper treatment.

On March 8th the attendance officer prosecuted Mr. Boyd in the magistrate's court, and a fine of $2.50 was imposed. This failed to bring about any noticeable improvement in the child's attendance. From this time until April 10th he attended but three out of a total of twenty-three sessions.

On April 10th Andrew was arrested for stealing shoes from a freight car at Wayne Junction. On this charge he was brought before the Juvenile Court. Since this time (April 10, 1906) he has been under the jurisdiction of the court and in the custody of one of its officers.

When the probation officer to whom the case was referred by the Juvenile Court called upon me for a report on the boy's character, I described to her his mental and physical condition, and explained the means which I believed must be taken to save the child. She took great interest in the case, and in the Juvenile

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Court on May 16th succeeded in having the court consent to an operation. The next morning the newspapers reported the fact in the following manner: "Tumor Cut Out to Make Bad Boy Good; Court Orders Unique Experiment on an Eleven-Year-Old Thief."

The probation officer placed the boy in St. Luke's Hospital, where the operation was successfully performed; but before the wound was healed the boy escaped. On May 29th he was again brought before the Juvenile Court and placed upon three months' probation. As he now failed to attend school altogether, the probation officer brought him before the court on June 25th, at which time the boy was given a hearing and all those persons interested in the case were present and allowed to contribute evidence.

The probation officer, in her address to the court, stated that the mother was a drinking woman and the home no fit place in which to save the child. In my testimony I stated that the operation which had been performed was not in itself a cure, but that it only made mental and moral improvement possible. The next and most important feature of his treatment must be prolonged careful training. I stated that in my opinion this training could not be given in a special school, owing to the child's persistent truancy and to the disadvantageous home surroundings. Under the existing conditions I recommended to the court that the boy be placed in the House of Refuge, where adequate care and training would be afforded.

Representations were made to the court on the part of those sentimentally interested to the effect that the boy should be permitted to remain at home for the mother's sake. The decision of the court was that Andrew should remain on probation and in the care of his natural guardians, and it was further determined that if Andrew should fail to attend school every day during the first two weeks of the fall session, he should then be sent to the House of Refuge. The result of this decision was to place the boy in the custody of two unfit persons, and to allow him to roam the streets during the summer months before the first attempt at training should be made.

In the following September, as the boy appeared but twice during the specified two weeks of the term, he was again brought before the Juvenile Court on September 24th. The father was instructed by the court to file a petition to have the boy placed in the House of Refuge on a charge of incorrigibility, but he failed to comply. At about this time Mrs. Boyd was placed in the House of Correction for drunkenness.

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The case was allowed to drift along until October 22d, when Andrew was once more brought before the Juvenile Court. This time the court committed him to a small private farm school near Norristown. He was taken there by the probation officer on October 24th. Two hours after she had started homeward the boy ran away.

This having proved a failure, the child was sent on an order from the court to live with an aunt on York Street. He was transferred on November 5th from my school to Special School No. 2, which is located near his aunt's residence. From November 5th to February 20th Andrew was present twenty-four out of sixty-seven school sessions. The attendance officer reported frequently seeing him loitering around the railroad station at Wayne Junction. He appeared to have deserted his aunt.

On February 20, 1907, the child was again arrested for stealing, and was given a hearing before the Juvenile Court on February 26th.

The probation officer again recommended to the court that Andrew be placed in the House of Refuge. The court, however, placed him on thirty days' probation with the understanding that he live with his aunt on York Street.

On February 23 the attendance officer received instructions from the Chief of the Bureau of Compulsory Education to prosecute Mr. Boyd for the non-attendance of his child at school. These instructions probably will be carried into effect. The boy's mother is now serving her second term in the House of Correction for drunkenness.

The history of this case presents the efforts of the Board of Public Education, through its Bureau of Compulsory Education and the system of special schools, to cope with the problem of controlling Andrew Boyd so as to subject him to appropriate mental and moral discipline. The failure of these efforts is to be attributed to the triumph of sentimental considerations, and perhaps to a misconception of the function of the House of Refuge, an institution established for the mental and moral training of children who are likely through bad environment, lack of home discipline, or improper associates, to fall into criminal ways. The boy will doubtless some day be committed to the House of Refuge, too late perhaps, for that institution to undo the results of the year's training at home and on the streets. If boys like this are not to be committed to the House of Refuge, it is desirable that the city should supplement the public school system with a parental school, where children of this type may be kept for brief periods and after improvement returned to the home and the regular schools.

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UNIVERSITY COURSES IN PSYCHOLOGY.

By Lightner Witmer.

What the department of psychology in a modern university teaches is quite as important as what it contributes to science in the way of original research. The exclusive pursuit of either teaching or original research will result in something less than the largest measure of effectiveness. The laboratory of psychology performs its appointed task of contributing new facts and principles to the world's stock of knowledge primarily in its character as a department of the graduate school of a university. But it must teach these facts and principles in the college as well as in the graduate school. The student comes to the laboratory of psychology because he desires information in a special branch of knowledge, or seeks training that will form mental habits, and give him a special attitude of mind, that of the psychologist, toward problems of a social, educational or individual nature. The adequate teaching of college and graduate students requires resources that can usually be found only in laboratories equipped for investigation. The most effective teaching of psychology will be done by those who gain their inspiration and knowledge from contact with the phenomena of mind, as these are studied by the experimental method. Thus psychology is primarily a graduate subject, a department of research, but it is one that has taken its place in the college department of most of our institutions of learning in response to an impulse that has been everywhere felt to enrich the restricted courses of the so-called humanities by a wider range of subjects in closer touch with modern life.

While college instruction in psychology is thus dependent upon a well-equipped graduate department, the laboratory of psychology, on the other hand, needs the college in order that it may gain the ear and attention of students especially interested in or adapted for psychological work. Nor must it neglect a wider appeal to the enlightened members of several professions. Psychology is at least implicitly a part of the professional training of the teacher, the physician, and the social worker, besides touching very closely the practical every-day needs of many non-professional persons. In its breadth of direct human appeal, psychology differs from many other sciences, as for instance physics and astronomy. For this reason it is important that the laboratory of psychology should seek to instruct and educate the community, because it is

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from the community at large that it will draw those students, whom adequate training will prepare to take up the burden of investigation.

Because certain institutions,—notably Clark and Columbia,—have understood the vital importance of an appeal to those who felt a practical need of psychology, these institutions have stood forth as examples of what an efficient and well-rounded department of psychology could offer to the public, to its students, and to science. Clark University, through the efforts of President Hall, who was the first to develop the field of experimental psychology in this country, occupies a distinctive position, not only throughout the United States, but in Germany as well, where its work in child psychology has caused a very decided modification in the scope of laboratories that are offshoots of the parent laboratory at Leipzig. Of equal importance is the contribution of Professor Cattell to the development of this department of comparative psychology through the organization of mental and physical tests and measurements. The laboratory of psychology in the University of Pennsylvania has been animated by the same impulse to seek to establish a comparative psychology, more particularly a child psychology, upon a secure foundation. While many institutions share in a common principle of action, it is natural that each institution should develop, through a greater emphasis upon some one method, a distinctive type of work; thus Clark University is characterized through the development and application of the syllabus method, Columbia through the statistical method, and the University of Pennsylvania through the clinical method.

I must not minimize the fact that there are psychologists who do not share the belief in the importance of comparative work in child psychology for the science of psychology and for the teacher. Thus the Harvard department of psychology maintains that experimental psychology is not only of no use to the teacher, but, in the words of the director of the Harvard laboratory, a positive "danger." That experimental psychology may be useless,—even dangerous,—to the teacher is doubtless true, but it is true only of that type of psychology represented by the Harvard laboratory, *i. e.*, a psychology dominated by philosophical ideas. And the Cornell laboratory, which has not been excelled in this country in the scientific quality of its experimental work, stands out frankly as a laboratory for experimental introspection within the field of the psycho-physics of the individual consciousness. I do not wish to appear to discredit or even to criticise the attitude of these departments of psychology. Whether it is justifiable for a

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department of psychology to devote its best efforts to the development of a comparative child psychology is a question that is hardly susceptible of settlement through academic discussion. It may safely be left for the future to determine through the beneficent operation of the law of the survival of the fittest.

To estimate what a department of psychology at any institution of learning represents, it is of as much importance to know the scope of its organization for teaching as to know the character of its output in the field of original investigation. In the administration of the department of psychology in the University of Pennsylvania, I have from the first considered it of prime importance to organize our courses in psychology so as to give the kind of training that can be utilized by students either in practical pursuits or in the service of original investigation. At the present stage of the development of psychology (for it is still in its infancy), I regard a well-considered plan of instruction to be in the nature of a contribution to the science. The courses in psychology that are offered at the University of Pennsylvania in the Summer School of 1907 are practically co-extensive with the regular courses offered in the college and graduate school. For this reason I desire to incorporate in the first number of *The Psychological Clinic* a statement of the purpose and scope of these courses, which will serve to indicate the trend of psychological investigation and teaching at this University.

The value of these courses must be judged with reference to the classes of students to whom they are offered. They are intended to meet the requirements of—

1. Graduate and undergraduate students of psychology, and instructors of psychology who have not had opportunity to follow courses in modern experimental and physiological psychology.

2. Superintendents of public schools, institute lecturers, and teachers desiring a broader education in the science whose principles underlie pedagogical methods.

3. Physicians and medical students who seek an acquaintance with modern psychological theory and method.

4. Those who are or desire to become teachers of backward and other special classes of defective children; and

5. Social workers, especially those whose efforts are directed toward the amelioration of the condition of children through factory legislation, truancy laws, the juvenile court and general philanthropy.

The essential prerequisite for intelligent work in any department of modern psychology is a training in introspective analysis

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and experimental methods. Without this training, it is immaterial whether the student be an instructor of psychology, a graduate or undergraduate student, a grade teacher or a superintendent of schools, a physician or a social worker,—he must pass through this introductory course, not merely because its actual content will serve as a foundation for future work, but also because it is only through work of this kind that he will learn how to observe and accurately record the phenomena of the human mind and of human nature.

The new psychology differs from the old in method rather than in fundamental principles. Method can only be acquired through individual laboratory work. The student must have presented to him, in an experimental course, the mental phenomena which he can subject to personal observation and introspection. He must be taught to observe closely and to record with accuracy, and especially to distinguish between what is actually before him and what, owing to preconceptions and theories, he thinks ought to be there. In other words, he must be trained to become in some measure a psychologist. To the degree that he acquires the psychologist's point of view, to that degree will he be able to employ what he has learned of psychology, in teaching, in medicine, or in social work. He will avoid the mistake of applying to his professional work either speculative opinions or the results of laboratory investigations that may not have any necessary bearing on the problems that confront him.

The first fundamental course is that given in the outline of courses below as Course 5, *Analytical Psychology*. It is based upon laboratory experiments dealing chiefly with perception, but involving also to some extent an analysis of more complex mental processes, such as apperception, attention, association, and memory. Complicated laboratory apparatus is not necessary; very simple and inexpensive apparatus will do for this first course. In fact, the simpler the apparatus the less likely is the student to have his attention diverted from the principles illustrated by the experiments. In developing this course to meet my conception of what it should be, I found it necessary to provide my own manual of experiments, which, after a number of years, grew into a book published under the title of *Analytical Psychology*.

The second course, which in a sense is quite as fundamental as the first, is given in the outline below as Course 6, *Physiological Psychology*. It involves laboratory work in the examination of the brain and other portions of the nervous system, and of their connection with the muscles and sense organs. The student studies

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experimentally reflex action, instinctive and voluntary activities, and the physiological processes underlying the emotions. The experiments are more complicated than in the previous course, and require more elaborate apparatus. To permit the students of a class to carry out the same experiments simultaneously, the laboratory has been equipped with several sets of chronographic and other recording instruments.

These two courses constitute the first year's work in psychology. In each course one hour a week is devoted to lectures and demonstrations and two hours to laboratory work for the half year. In the Summer School, Course 1, *Modern Psychology,* will cover the lecture portion of the year's work, while Courses 5 and 6, each in two hour periods, cover the laboratory portion.

The work of the second year is devoted to synthetic and genetic psychology. The first subject taken up is the combination of simple elements to form complex mental states. The student is made acquainted with the phenomena of after-images, memory images, and the organization of memory, imagination, association, the emotions, and the will. This study of the mind as a structure built up of simpler elements is combined with or followed by a study of the development of simple and complex mental functions in the individual and the race. In this course one hour is devoted to lectures and two hours to laboratory work throughout the year. The lecture portion is represented in the Summer School as Course 3, *Genetic Psychology,* which will be limited to the evolutionary and other processes resulting in the development of the individual consciousness.

These courses constitute an introductory outline of psychology. The student has obtained some training in introspective analysis,—the dominant note of the first course; he has been made familiar with psycho-physiological conceptions; and he has received a consistent account of the genesis of mental functions. Throughout, he has been acquiring practice in the methods of experimentation, and has learned how to form conclusions from the results of his experiments, and to eliminate from his legitimate conclusions preconceptions and theories of speculative and other origin. He is now supposed to have a general survey of the field of psychology, and to have made a sufficient acquaintance with psychological method to undertake for himself the solution of definite problems. He is ready for special work.

The most important single field of work comprehended within the general field of psychology is that of child psychology. Child psychology is represented, as a department of comparative and

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genetic psychology, among the courses offered in the University of Pennsylvania, and comprises three divisions:

1. A lecture course presenting the special methods and results of child psychology.

2. A seminar presenting the results of original work on problems connected with the psychology of education; and

3. The psychological clinic.

In the regular courses of the college and graduate school, this work is combined into a single course, and no student is permitted to undertake it until he has completed the two years of introductory courses. It is a mistake to encourage teachers to believe that they can tumble into an understanding of child psychology without a thorough foundation in the general facts and principles and methods of psychology. For the Summer School, however, it was felt that a compromise was necessary; and this work is accordingly offered to students of the Summer School as three separate courses, and will be presented in such a manner that students without previous preparation in psychology may pursue them with profit. These courses are outlined in detail below as Course 2, *Child Psychology;* Course 4, *Educational Psychology;* and Course 8, *The Psychological Clinic.*

The seminar course in educational psychology has some features that are quite new in work offered along this line. It is a composite course given by a number of different lecturers: these lecturers have been conducting original research in child psychology, for the most part in connection with the laboratory of psychology; they will present the results of their investigations in a form that will make the significance of their contributions to education rightly understood by teachers and others entered for the course. The object of the seminar is not only to report results that have a value for the science of psychology and education, but also to demonstrate the methods by which psychological and educational research may be conducted by those who are actively engaged in the profession of teaching.

It would lead us too far afield to describe the various lines of experimental work that are represented in the regular courses in experimental psychology. In the Summer School this work is represented by Course 7, *Advanced Experimental Psychology.* This is intended only for students who have had preliminary training in laboratory methods of experimentation. Students taking this course will be divided into small sections, and will be assigned problems which they will carry out under supervision.

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A better understanding of the scope of these courses may be obtained from the following outline.*

PSYCHOLOGY 1. *Modern Psychology.*—A course of lectures presenting an outline of the problems and theories of modern psychology.

Mental Analysis.—An analysis of perception based upon the results of experimentation and introspection; the role of apperception, memory, attention and association; perceptions of space; the sense organs; the physical stimuli or objects of perception.

Mind and Body.—The nature of the will; automatic and reflex movements; inherited instincts and acquired habits; impulse and emotion; the structure and functions of the human nervous system.

Mental Synthesis.—The permanent effects of sensation and movement upon the brain; sensory after-images; memory images; cerebration and association; organization of imagination and memory; the development of ideas, the intellect and reason; the growth of attention and will.

By Dr. E. B. TWITMYER, Instructor in Psychology in the University of Pennsylvania.

PSYCHOLOGY 2. *Child Psychology.*—A course of lectures on methods and results. Greater attention will be given the methods which, like the clinical and statistical methods, are capable of giving results when employed by investigators who are actively engaged in educational work.

The Experimental Method.—The development of chronometry; the personal equation; invention of the chronograph and the chronoscope; measurement of the time it takes to perceive, to associate ideas, to add or multiply, to apperceive complex stimuli as, for example, words, sentences, etc.; the determination of threshold values; the quality of association; spelling errors; the extension of the experimental method to child psychology as a branch of comparative psychology.

The Statistical Method.—The history of its origin; Quetelet, Chadwick, Fechner, Darwin, Galton; the development of anthropometric tests; the psycho-physical tests of Cattell; statistics of association and other mental processes; statistics of defects of school children.

The Interrogatory Methods.—Under this head will be discussed (*a*) introspection; (*b*) the syllabus of general interrogations; (*c*) the questionaire or syllabus of specific questions; (*d*) the analytic study of compositions, drawings and examination papers.

The Genetic Methods.—Under this head will be discussed (*a*) the ontogenetic method as developed by Darwin, Preyer, Perez, Moore, Shinn and others, which attempts a scientific biography of an individual child, or which may be directed to the examina-

*See also Courses in Psychology for Normal Schools, *The Educational Review*, 1897, xiii, 45-57, 146-162.

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tion of special periods, as, for example, adolescence; (*b*) the phylogenetic method, which is directed to the study of the development of civilized races from primitive races and of the human consciousness and character from lower forms; (*c*) the method of comparative anatomy, which is based upon the correspondence of mental development and the structure of the nervous system; (*d*) the methods employed in the study of hereditary and acquired degeneracy, for example, mentally and morally deficient children, criminals, mental disorders, including insanity, disorders of speech, the mental dissolution of senescence.

The Clinical Method.—The history of its origin; Pereire's proof that a deaf child may be taught to talk; Itard's training of the wild boy of Aveyron; Seguin's first class of feeble-minded children; the development of training schools for feeble-minded children, and for the blind, the deaf and the morally delinquent; the present status of the problem of backward children; the work in Germany, England and the United States; the necessity of familiarity with the clinical method for the grade teacher and especially for educators in positions requiring supervision; an outline of the requirements of a clinical examination and record; illustrative cases.

The Systematic Record of Unrestricted Observations.—Children in the Home, at School, on the Street, at Play, etc.

The Examination of the Literature of Child Life.—Under this head will be mentioned (*a*) biographies; (*b*) autobiographies; (*c*) artistic interpretations of childhood; (*d*) naive conceptions of child life, for example, in general literature, tales of parents, comic stories, folk-lore, tradition and history.

By Dr. LIGHTNER WITMER, Professor of Psychology in the University of Pennsylvania.

PSYCHOLOGY 3. *Genetic Psychology.*—A course of lectures on the evolution of the individual consciousness.

Biological evolution and the hereditary factor; natural selection through variations; the inheritance of acquired characters. The congenital factors (not hereditary); the prenatal effect of disease and acquired paternal and maternal degeneracy; the effect of accident, shock and other influences during intra-uterine life; birth injuries. The dawn of consciousness through the awakening of the senses in the first month. The development of the infant consciousness to the end of the eighteenth month. The growth of intellect through the co-ordination of sense and movement, and especially through the acquisition of language. The first appearance of inherited but previously latent instincts at puberty; the factor of sex in the genesis of character; the relation of precocity to delinquency; hysteria and allied mental disorders. The mental phenomena of adoles-

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cence. The culmination of adolescence in adult consciousness—the completed evolution of personality and will. Senescence and the decline of individual consciousness.

By Dr. HERBERT STOTESBURY, Professor of Psychology in the Temple College.

PSYCHOLOGY 4. *Educational Psychology.*—A seminar course for the report and discussion of the results of the original investigation of special problems that are of practical importance to education as well as of scientific value to psychology. These lectures will be given by investigators who, for the most part in affiliation with the Laboratory of Psychology, have conducted original research while actively engaged in educational work. The results of these investigations, many of which will be announced for the first time in this course, are important contributions to experimental psychology and pedagogy, as well as practical demonstration of methods by which those engaged in the profession of teaching may at the same time successfully conduct original research. The several lecturers will give from one to five lectures each on the topics presented below.

Statistics of retardation in school work, and the method by which the superintendent of a school system may, with the assistance of his principals and grade teachers, determine the extent, character and causes of retardation in the children of his schools. The adaptability of the method to any school system and the possibility and necessity of training the grade teachers to assist in this work will be demonstrated. Statistics from the schools of the city of Camden, N. J., will be reported and analyzed to show the educational and psychological significance of the results.

By Mr. J. E. BRYAN, Superintendent of Schools, Camden, N. J.

The language problem. Oral and written language. The psychology of the spelling process and spelling errors. Tests of spelling accuracy for the ascertainment of the efficiency of the spelling drill and the place it should occupy in the school curriculum. Rice's results and those of the North West School, Philadelphia.

By Dr. OLIVER P. CORNMAN, District Superintendent of Schools, Philadelphia, Pa.

Truancy and delinquency. The significance of truancy in relation to juvenile delinquency and adult criminality. The organization of truant and parental schools, made necessary by the enforcement of compulsory education. The status of compulsory education enactments in the United States and the enforcement of the compulsory education act of Pennsylvania in Philadelphia. The relation of the Juvenile Court to truant and

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parental schools and to reform schools. Clinical reports of truants, moral defectives and other disciplinary cases.

By Mr. EDWARD A. HUNTINGTON, Principal of Special School No. 3, Philadelphia, Pa.

Examination of the eyesight and hearing of school children. A demonstration of the practical methods by which the grade teacher or principal may conduct tests, keep the record of their results and interpret them. The betterment of the condition of pupils who are defective in sight and hearing. The relation of mental retardation to defects of sight and hearing. Results of the tests of children in the Trenton schools.

By Mr. J. M. MCCALLIE, Supervising Principal of the Centennial Grammar School, Trenton, N. J.

Backward and feeble-minded children from the standpoint of the grade teacher and supervising principal.

By Miss MARGARET T. MAGUIRE, Supervising Principal of the Wharton Combined School, Philadelphia, Pa.

The best conditions for the training of mentally deficient children—the home, the special school and the institution.

By Miss MARY E. MARVIN, Teacher of Articulation, Head of a Home School for Nervous and Defective Children, Philadelphia, Pa.

Farm Schools for children requiring discipline and special training.

By Dr. H. C. PORTER, "The Farm School," Media, Pa.

Special schools and classes for backward children under the direction and control of the city school system. Their origin and development in Germany, England and the United States. The condition of classes for backward children in Philadelphia. Experimental study of the emotions: the circulatory and respiratory processes accompanying melancholia.

By Miss CLARA H. TOWN, Resident Psychologist at Friends' Asylum for the Insane, Frankford, Pa. Formerly Teacher in Special School No. 9, Philadelphia, Pa.

The diagnosis and treatment of backward children in public schools. The application and personal working out of the clinical method in the solution of the problem by the superintendent of a school system. Results of the method in the Wilmington schools.

By Dr. GEORGE W. TWITMYER, Superintendent of Schools, Wilmington, Del.

PSYCHOLOGY 5. *Analytical Psychology.*—Laboratory course. The object of this course is to demonstrate, by the use of simple experiments, the fundamental facts and principles of psychology. Under the direction of the instructor, a series of illustrative experiments will be performed by each student and described and commented upon in the laboratory note-book. In addition to the hours of class work, students will

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be directed in the prosecution of as much individual work as each has time and inclination to do. Laboratory Manual: Witmer's *Analytical Psychology.*

By Professor STOTESBURY.

PSYCHOLOGY 6. *Physiological Psychology.*—Laboratory course. The anatomy and physiology of the nervous system, the sense organs and the organs of movement. Each student will be supplied with models and photographs for study and with prepared specimens of the human and ox brain for dissection. A course of experiments will be conducted on the excitation of muscle and nerve, and on reflexive, instinctive and volitional actions.

By Dr. E. B. TWITMYER.

PSYCHOLOGY 7. *Advanced Experimental Psychology.*—Seminar and laboratory course. The purpose of this course is to acquaint more advanced students with the general methods of experimentation. Selected topics are studied experimentally and original authorities and the results of recent research consulted. Text-book: Titchener's *Manual of Experimental Psychology.* (Qualitative and Quantitative.) One hour seminar and two or four hours laboratory work. Hours will be arranged to meet the convenience of the students taking the course. Research Rooms of the Laboratory.

By Dr. E. B. TWITMYER.

PSYCHOLOGY 8. *The Psychological Clinic.*—Children will be examined in the presence of the students taking this course. The object of the course is to illustrate various mental and physical defects found in school children, to discuss the causes, to point out the nature of the consequent retardation and to propose the appropriate treatment. The course will also serve to make the student acquainted with the methods of examination. A daily clinic will be conducted by Professor WITMER and his assistants or by medical specialists for the eye, the ear, the nose and throat, the nervous system, orthopedics and internal medicine.

A training school for backward and defective children will also be in daily session. One or more classes will be taught by competent instructors. Clinical study will also be carried on through visits to neighboring institutions for the training of special classes of children—the Pennsylvania Training School for Feeble-minded Children at Elwyn, the House of Refuge, and the Pennsylvania Institutions for the Instruction of the Blind and Deaf.

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Child and Educational Psychology. The Psychological Bulletin. Vol. III, No. 2, Nov. 15, 1907. Edited by M. V. O'Shea.

The leading article of this number of the "Psychological Bulletin" is a critical and historical survey of recent work in education and child psychology from the pen of its editor, the Professor of the Science and Art of Education in the University of Wisconsin.

Speaking for educationists in this country, Professor O'Shea says: "The belief is growing very strong among us that education can and ought to be treated as a phase of biological and psychological science, and this attitude is manifest in much of the current American literature on the theory of education and the principles of teaching."

In commenting upon the importance of the direct observation and study of the developmental processes in children, he continues: "Educationists are convinced that they cannot discover the thoughts, emotions, attitudes, and impulses of a boy of five, say, by simply turning their vision in upon themselves. The boy must be observed as a natural object in all his reactions; and he must also be subjected to special stimulations, so that his responses can be accurately determined. Most educationists among us are now students to some extent of children or of the theories of child development, and educational writing is to a constantly increasing degree reflecting the developmental attitude."

While emphasizing the importance of child psychology to the teacher, O'Shea observes with favor the disappearance of the spectacular element in the child study movement. Undoubtedly this represents an early phase of the development of child psychology. Let us hope that child psychology is now ready to enter upon a strictly scientific stage with a more adequate terminology. It is disappointing to find O'Shea constantly using the silly expression "child study" in the body of his article, although he employs the more appropriate "child psychology" in its title. Children in the elementary grades are supposed to pay some attention to "nature study"; an important group of scientists are also students of Nature, but they commonly refer to their branch of inquiry as Biology. Even a child may pursue "nature study," and the entirely untrained mother or teacher may pursue "child study." Let us hope we have reached the end of the "child study" period and have advanced to the stage of a scientific child psychology, for the prosecution of which adequate training and experience will be required.

It will be interesting reading for Dr. Stanley Hall, who has filled the "American Journal of Psychology" and the "Pedagogical Seminary" for many years with the results of the syllabus method, to learn that although "there is some of this sort of thing yet . . . no one pays much heed to it."

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It is also news to some of us to learn that the study of children has been carried on almost wholly by educationists and teachers actually in service. We have been under the impression that child psychology had been developed in this country by those who were primarily psychologists, going out from laboratories of experimental psychology into the laboratories of experimental pedagogy,—the school rooms of the country. O'Shea's review gives in this respect an entirely wrong idea of the history of work in child psychology, unless he desires to restrict child psychology to the diluted article that is practiced under the title of child study in many parts of this country. It is true he emphasizes the necessity of skilled observers, but the only line of investigation which meets his hearty approval is that which follows an individual child or a group of children for several years from day to day or week to week. As a matter of fact, biographies and autobiographies are the least scientific of records, and this method has been least productive in accurate results of all the methods of child psychology. While Professor O'Shea is right in emphasizing the relation that subsists between the psychology of the individual and the education of classes or groups of children, he mistakes the problem of public education, which is not how most successfully to educate an individual child, but how to teach groups of forty or more children. The psychology of the individual differs from the psychology of the mass, and methods that are found eminently successful in the training of an individual child are not necessarily successful when applied in class work. On this account, the scientific study of the psychology and pedagogy of groups of children should be of equal if not more importance to the teacher than the psychology and pedagogy of the individual.

With Professor O'Shea, we view with favor the passing of formal psychology as an introduction to the study of education, and we hope it is true,—though we doubt it,—that this formal psychology is being restricted "to the mechanical type of normal schools where nothing will be tolerated which is not perfectly systematized and formal and easily memorized." As Professor O'Shea points out, the only psychology worth while to the teacher is that which brings him to the point where he can actually see his psychological principles illustrated in the activities of the pupils about him.

But this is no reason for minimizing the importance of the experimental method, nor can we see any justification for the contention that Thorndike in his "Principles of Teaching" abandons the exact methods which Thorndike in his "Educational Psychology" proposes for the purpose of measuring mental traits and changes as affected by educational processes. The "Principles of Teaching" does not lay the same stress as the "Educational Psychology" upon the experimental method, simply because it was written with a different object. It deals, as the author says, with the *"How"* of actual teaching, not with the *"Why,"* or the *"What."* Nevertheless, even in the "Principles of Teaching" teachers are given the benefit of the results of applied experimental studies. The

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argument in the chapter on "Individual Differences," for example, is based entirely upon exact results obtained by tests in spelling and arithmetic, and presented in the form of a series of tables and curves. Instead of turning away from the exact experimental method, Thorndike's most recent book raises the method to a more important place by demonstrating its practical necessity as a basis for a rational system of teaching. He is very insistent that all special methods of teaching should be subjected to exact scientific experimentation. Only when this is done can a final result be reached in demonstrating which of a number of methods is the most successful. In this manner he proposes to reach certainty as to the most effective method of teaching spelling, grammar, or arithmetic. As typical of such study of methods, he cites Rice's and Cornman's investigations of spelling in the elementary schools. We fail to see in all this where Thorndike abandons his exact methods.

Professor O'Shea fires a blank cartridge at physiological psychology. He says that the principles of physiological psychology and of the study of the nervous system are useless to the teacher. As a matter of fact, the psycho-physiological standpoint in psychology is more securely established to-day than ever, and education is compelled to give increasing heed to its teachings. How, for example, will Professor O'Shea explain to his students the function of the senses, and the relation of sensation to the development of memory and imagination; how will he make clear to them the nature of the instincts and emotions; how will he interpret the phenomena of impulse and will; how will he even make attention an intelligible problem; and, finally, how will he treat education as a "phase of biological science" and yet make no reference to the anatomy and physiology of the sense organs and brain, and to the developmental relation of complex psychical reactions to inherited instincts and reflexes?

Physiological psychology, Professor O'Shea thinks, may help in some particular situations, as in understanding and dealing with abnormal manifestations, for example, in fatigue, etc. In this admission alone he has sufficiently acknowledged its importance to educational psychology. Abnormal mental manifestations are not restricted to children in schools for defectives. There are few classes of first, second, or third year children that do not contain a number of children who manifest some form of abnormal mental functioning. Without an intimate knowledge of the close relation between physical and mental conditions, a teacher may fail to discover a defect that is retarding or will later retard the child's progress. The oft reiterated appeal of a teacher to the children in her class to "pay attention" is in most cases amusing, in some cases pathetic to those who know the psychological antecedents and the physiological conditions of the state of attention. If the teacher has some knowledge of physiological psychology, and knows the relation between the power of attention and such physical conditions as digestive disturbances, nasopharyngeal obstructions, eye and ear defects, and temporary or permanent nervous disability, she will substitute for the appeal to "pay attention" an examination of her children, and on finding defects of vision

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or hearing she will place the "inattentive dullard" nearer to the blackboard and herself, and if necessary endeavor to secure medical assistance.

Work of this kind is being carried on in our schools to-day to a greater extent than ever before, and through this work physiological psychology is making itself increasingly felt in the educational field. The syllabus method, the method of exact experimentation, and the methods of physiological psychology are in reality those methods which are responsible for most that is of value in the educational psychology of to-day, and they may be expected to give rise to such a treatment of education as, in the words of Professor O'Shea, "can and ought to be made," *i. e.*, the treatment of education "as a phase of biological and psychological science."

NEWS AND COMMENT.

The Department of Child-Study and Pedagogic Investigation of the Chicago Public Schools is, during the present year, devoting three days a week to the practical work of establishing accurate classifications of the subnormal children in the schools. The remainder of the time is spent in the laboratory giving a psycho-physical examination to those children who require special training or treatment in the school system—those to be entered in the rooms for deaf, blind, crippled and subnormal children, truants and incorrigibles for the parental school, normal children with individual peculiarities, and in addition for the juvenile court, certain cases of delinquency and dependency.

Dr. Charles Hubbard Judd, the author of "Genetic Psychology for Teachers," has been promoted to be Professor of Psychology at Yale University.

Dr. Ernst Meumann has been called to the chair of Philosophy at Münster. Professor Meumann is one of the ablest of Wundt's pupils, a graduate of the Laboratory of Psychology at Leipzig. As the editor of "Archiv für die Gesamte Psychologie," he has made this representative psychological periodical an important medium for the report of investigations in Child Psychology.

The Fourth National Conference on the Education of Backward, Truant and Delinquent Children will be held at Minneapolis, Minn., commencing Monday, June 10, 1907, and continuing until Wednesday evening, June 12, 1907.

The School of Pedagogy of the New York University has established a course of lectures on the Education of Defectives. Among the lecturers are: Elias G. Brown, Department of Physical Education, New

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York City; Martin W. Barr, Superintendent of the Pennsylvania Training School for Feeble-Minded Children; E. R. Johnson, Superintendent of the New Jersey Training School for Feeble-Minded Boys and Girls; Walter E. Fernald, Superintendent of the Massachusetts School for the Feeble-Minded, Waverly, Mass.; Luther M. Gulick, Director of Physical Education in Public Schools of New York; James P. Haney, Director of Education in Manual Arts in Manhattan and the Bronx; Alexander Johnson, Lecturer in New York School of Philanthropy; Thomas M. Balliet, Dean of the School of Pedagogy, New York University.

The Second International Congress of School Hygiene is to be held August 5-10, 1907, at the Royal Sanitary Institute, Margaret Street, London, W. There will be a section devoted to the Physiology and Psychology of Educational Methods and Work.

Dr. Shepherd Ivory Franz has accepted the position of Psychologist at the Government Hospital for the Insane, Washington. He will also fill the Professorship of Physiology in the George Washington University.

The Netherlands Psychiatry and Neurology Society is organizing an International Congress on Psychiatry, Neurology, Psychology and the Nursing of Lunatics, to be held at Amsterdam, September 2 to 7, 1907. A circular inviting co-operation has been issued to psychologists, psychiatrists and neurologists in this country. Anyone taking an interest in psychology, psychiatry, neurology or the nursing of lunatics may become a member of the Congress, for which the membership fee is sixteen shillings eight pence. Members intending to present papers are requested to send a synopsis before the 1st of May, 1907, to the secretary's office, who will see to the printing and translation thereof and will hold copies at the disposal of each member of the Congress. Information concerning the Congress may be had by addressing the General Secretary's office, Prinsengracht 717, Amsterdam.

A public kindergarten for children with abnormal speech was opened October 17, 1905, at Frankfort-on-Main, Germany. This is the beginning of a movement that it is hoped will grow to some proportions. One cannot begin too early in the child's life to diagnose the causes and attempt the correction of speech defects.

Mr. George Herbert Locke, recently Dean of the College of Education of the University of Chicago, and editor of "School Review," has been appointed Dean of the School for Training of Teachers, in the Macdonald College, founded by Sir William Macdonald, and affiliated with the McGill University, Montreal.

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The Psychological Clinic

VOL. I. No. 2. APRIL 15, 1907.

A METHOD FOR DETERMINING THE EXTENT AND CAUSES OF RETARDATION IN A CITY SCHOOL SYSTEM.

BY JAMES E. BRYAN,

Superintendent of Schools, Camden, N. J.

The intensive study of social conditions which has characterized the last fifteen years in England and the last ten years in this country, and the serious efforts now being made to enforce the provisions of compulsory education enactments, have led to the discovery that there are in the public schools not only many children that are properly called feeble-minded and therefore belong in special institutions, but a much larger number of children that have for one reason or another been unable to make that steady progress in school work which the school system presupposes that the normal child should make. For example, the school system regards the normal age of the child in the first grade to be under seven years. A most superficial examination will reveal to every superintendent that there are in his schools many children that are over seven years of age in the first grade.

In the first grade of the Camden schools, in the fall of the year 1905, 52.6 per cent of the children were over* seven years of age, the theoretical age limit of a first grade child; 27 per cent of the children were over eight years of age; 13 per cent were over nine; 7 per cent over ten; 3½ per cent over eleven; 2 per cent over twelve; and ¾ of 1 per cent over thirteen.

The school system assumes that one year is required for the passage of the normal child through each grade. If the normal first grade child is under seven, the second grade child should be under eight, the third grade child under nine, and the fourth grade child under ten; the eight years of primary and grammar work should be passed through before the child has exceeded his fifteenth year, when he should enter the high school. As a mat-

*All children are recorded as being over seven years of age who have passed the seventh birthday; they may be under or over eight. A similar explanation applies to each age.

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ter of fact, 72 per cent of the children in the Camden schools exceed these age limits. The New York City statistics for 1904 show that over 71 per cent of the children in the New York schools exceed these age limits.

I am confident that these theoretic limits are usually exceeded in actual practice, and when we consider the fact that in some states children are not admitted to school under six years of age, there may be reason to raise the question of their validity even as theoretic limits.

I do not believe that we can consider a child who is under eight years of age in the first grade to be of excessive age for the grade; and in view of the very limited data available thus far in the study of this problem, I have determined, for the purpose of this investigation (as will appear on a later page) to treat no child as being of excessive age for the first grade who was under nine in the fall of the year when these figures were collected.

Whatever influences may have conspired to bring about the conditions noted above, I believe that we are justified in defining retardation in terms of school progress. No other definition of retardation has equal objectivity. Accordingly, I consider all children in the first grade who have passed their ninth birthday at the time of the fall registration to be pedagogically retarded; all children in the second grade who have passed their tenth birthday, and by allowing one additional year for each grade in succession, all children in the eighth year who have passed their seventeenth birthday. As school conditions improve, the line that separates those whom we consider to be retarded from those we assume to be normal may be lowered by one or more years. At the suggestion of Professor Witmer, I undertook to ascertain the number of children in the schools of Camden who were pedagogically retarded, in order that I might obtain the preliminary data for an investigation into the general causes of retardation. I have worked out my results for the ten thousand children enrolled in the schools of this city according to the plan which I give here in outline. By this plan, any superintendent may, with the assistance of his principals and teachers, obtain satisfactory statistics of progress through the grades in a school system. I desire to lay especial emphasis on the fact that this work greatly assists teachers in the comprehension and conduction of their task and has served to reveal to me many facts connected with this school system which I should otherwise not have known.

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I began the work with an analysis of the enrolment figures for 1904-05 as taken from the school registers, and followed this up with a similar analysis of the enrolment figures for 1905-06. The actual number of children of each age, male and female, in each grade was found, as well as the percentage which each number is of the whole number of pupils in that grade. The table on pages 44 and 45 gives the number of children of each age in each grade and the percentage that these children are of the total number in the grade. The table also gives the percentages which certain groups of children are of the whole number in the grade. Thus one may see for the first grade not only the percentage of pupils of six years of age, of seven years of age, etc., but also the percentage of pupils under seven years, including both five years and six years; also the percentage under eight years and under nine years; and finally the percentage nine years of age and over. This grouping will be found to be of importance in the subsequent use of the figures representing retardation.

Some highly significant conclusions concerning the general progress of children through the grades, which can be reached through an examination of these tables obtained from the enrolment, will be pointed out.

The range of age in the first grade is from five to sixteen years, in the second grade from five to seventeen years, in the third grade from six to fifteen years, in the fourth grade from seven to seventeen years, in the fifth grade from eight to sixteen years, in the sixth grade from nine to seventeen years, in the seventh grade from ten to eighteen years, and in the eighth grade from eleven to eighteen years.

If a child enters school at five years of age,—the minimum legal age in New Jersey,—and advances regularly one grade each year, the lowest age at which he may be found in the first grade is five years, in the second grade six years, in the third grade seven years, in the fourth grade eight years, in the fifth grade nine years, in the sixth grade ten years, in the seventh grade eleven years, and in the eighth grade twelve years.

The percentage of children of the minimum age found in the first grade is 16, second grade 5, third grade 4½, fourth grade 2, fifth grade 2½, sixth grade 4, seventh grade less than 3, and in the eighth grade 4.

If these figures may be regarded as constant for a series of years (and I may note that the statistics for the two years 1904-05 and 1905-06 show no significant variations), then it appears from the tables that only 16 per cent of the children

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The number and percentage of children of each age in each of the eight grades of the Camden schools. The table also shows the percentage of children under certain ages and over the age taken to distinguish the children considered retarded from those considered to have shown normal progress.

Age		5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
	Number	604	1158	958	494	237	136	69	33	20	7	.....	1	.....	.....	3717
Grade	Percentage	16.25	31.15	25.77	13.29	6.38	3.66	1.8	0.9	0.5	0.02	.....	.....	.....	.....	
I.	" "		47.4													
	" "			73.17												
	" "				86.47		13.53									
	Number	7	109	503	600	448	268	133	75	38	8	4	3	1	.....	2197
	Percentage	0.3	4.96	22.89	27.31	20.39	12.2	6.05	3.4	1.7	0.4	0.1	0.1	0.04	.....	
Grade	" "		5.28													
II.	" "			28.17												
	" "				55.48											
	" "					75.87		24.1								
	Number	.....	3	93	297	561	470	317	238	115	42	10	.....	.....	.....	2146
	Percentage	.....	0.1	4.33	13.8	26.14	21.9	14.77	11.1	5.36	1.96	0.4	.....	.....	.....	
Grade	" "			4.5												
III.	" "				18.3											
	" "					44.44										
	" "						66.34		33.64							
	Number	.....	.....	2	40	236	397	469	363	245	89	14	2	1	.....	1858
	Percentage	.....	.....	0.1	2.15	12.7	21.36	25.24	19.54	13.18	4.79	0.7	0.1	0.05	.....	
Grade	" "				2.26											
IV.	" "					14.96										
	" "						36.32									
	" "							61.56		38.43						

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Age		5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
	Number	.....	.....	.....	3	29	135	305	373	274	128	50	4	.....	.....	1301
	Percentage	.....	.....	.....	0.2	2.23	10.3	23.4	28.7	21	9.8	3.8	0.3	.....	.....	
Grade	" "					2.46										
V.	" "						12.76									
	" "							36.16								
	" "								64.9		35					
	Number	.....	.....	.....	.....	1	33	120	198	250	164	75	17	5	.....	863
	Percentage	.....	.....	.....	.....	0.1	3.8	13.9	22.9	28.9	19	8.7	1.9	0.6	.....	
Grade	" "						3.9									
VI.	" "							17.8								
	" "								40.7							
	" "									67.76		30.24				
	Number	.....	.....	.....	.....	.....	2	10	49	114	128	87	46	11	2	449
	Percentage	.....	.....	.....	.....	.....	0.4	2.23	10.9	25.4	28.5	19.3	10.2	2.47	0.4	
Grade	" "							2.67								
VII.	" "								13.6							
	" "									39						
	" "										67.5		32.5			
	Number	.....	.....	.....	.....	.....	.....	1	10	46	90	82	27	11	2	269
	Percentage	.....	.....	....	.....	.....	.....	0.4	3.7	17	33.4	30.4	10	4	0.7	
Grade	" "								4.08							
VIII.	" "									21						
	" "										44.6					
	" "											85		14.8		

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enter school at the earliest legal age; that less than 20 per cent of the children who enter school at five years complete the first year's work in one year, that less than 16 per cent complete two grades in two years, and that less than 7 per cent complete three grades in three years.

The age of the maximum number of children in each grade is shown to be six years in the first grade, 31 per cent of all the children in the grade being of this age; eight years in the second grade, 27 per cent being of this age; nine years in the third grade, with 26 per cent; eleven years in the fourth grade with 25 per cent; twelve years in the fifth grade with 29 per cent; thirteen years in the sixth grade with 29 per cent; fourteen years in the seventh grade with 29 per cent; and fourteen years in the eighth grade with 33 per cent. The greatest number of children of any one age found in each grade is thus shown to range from one-fourth to one-third of all the children in that grade.

Considering the progress of this maximum number of children in each grade, it is found that one year is lost between the first and second grades and another between the third and fourth grades, *i. e.*, that it requires six years for this maximum number of children to complete the first four grades of school work.

It is to be noted that this conclusion does not of necessity apply to the majority, though it is probable that it does.

In grades five to eight the maximum number found to be of one age in each grade increases in percentage and advances regularly one year with each grade through the seventh. The maximum number for the eighth grade is of the same age as for the seventh, thus indicating that this maximum number does four years of work in three years of time, a result due probably to the rapid falling off in the enrolment of older pupils in the seventh and eighth grades.

Before we can arrive at a definite conclusion as to the extent of retardation and its causes, we must establish some standard of normality. A line of demarcation must be drawn upon some principle between normal and backward ages in each grade.

In establishing this line, the chief consideration has been the fact that attendance upon school becomes compulsory at the age of seven.

If the assumption that practically all children can be entered in school promptly upon the completion of the seventh year were warranted, as well as the further assumption that practically all normal children may be expected to complete the work of the

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first grade in one year, then it would seem that any child found in the first grade in his eighth year of age should be considered backward.

If this age limit is taken to separate those children whom we shall consider backward from the other children in the first grade, we find from the figures of the preceding table that 47 per cent of the children are over age for their respective grades. In view of the fact that this is an initial investigation into the general conditions of progress through the grades for the purpose of determining the causes of retardation, I have thought it desirable to set the limit even beyond this and to include within the normal age all those whose age was over eight but under nine. In consequence, for the purpose of this investigation, children under nine in the first grade are considered to have made normal progress: children who are nine or over have been separated into a group by themselves for purposes of study as children manifesting retardation in school work.

For the other grades, one year is added successively to this limit. Whatever error we may have made in fixing this line of separation, it is safe to assume that it is on the side of conservatism. It is an extreme limit.

Upon this basis, of the enrolment in each grade for 1905-06 the percentage of backward pupils is as follows:

Grade 1	$13^1/_2$	per cent.
" 2	24	"
" 3	$33^2/_3$	"
" 4	$38^1/_2$	"
" 5	35	"
" 6	$30^3/_4$	"
" 7	$32^1/_2$	"
" 8	$14^7/_8$	"
All grades	$26^1/_3$	"

From the enrolment for 1904-05, the backward pupils in all grades amounted to 26 per cent,—a difference of only one-third of one per cent.

The extent of backwardness having thus been determined according to the standard adopted, the next problem was to learn the conditions under which it existed and if possible the causes. To do this a census of all the children in the schools was taken, involving the following points:

1. Name.
2. Residence.

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3. Age in years and months.
4. Number of years in school.
5. Length of time in present class.
6. Present progress.
7. Attendance.
8. Sight.
9. Hearing.
10. General health.
11. Special data as to inattention, mental deficiency, and bad conduct.

Special forms were printed and distributed to all the teachers. All of the data asked for were to be found in the school records except those concerning the sight, hearing, general health, and special data as to inattention, mental deficiency and bad conduct; and of these the conditon of sight and hearing alone required special investigation.

For the investigation of the sight and hearing, especial preparation was made. Snellen test cards, both the alphabet and gridiron or illiterate types, were provided for each school.

The medical inspector and the superintendent conducted a demonstration in the auditorium of the high school, to which the teachers were invited. Pupils of the first, second, and third grades were examined and the methods and results were discussed fully.

After this, the medical inspector and the superintendent visited each school in the city, and conducted a demonstration with six or eight children in the presence of the teachers, who asked questions very freely and assisted with the work.

The teachers then proceeded to make their own examinations, taking regular school time for it.

The reports give evidence of very careful work on the part of the teachers.

The instructions were not issued in printed form, as it was found much better to make the plan clear by personal demonstration. The points brought out in the demonstration may be described as follows:

Sight Test.

1. The cards are of two kinds, viz.: the gridiron or illiterate card for use with children of the first grade, and the alphabet card for use with children who know the letters.

The distance at which each line of characters may be seen normally is marked on the card.

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2. The card is to be hung up on the wall or blackboard directly in front of an open space or aisle, so that as good light as possible may fall upon the card. Care should be taken to avoid direct sunlight and strong reflections. Ideal light conditions may not be possible. Take conditions that are ordinarily good. A few rooms may be too dark to be used at all. An especially bright day is not essential for the test. Fair weather conditions are all that is required.

3. The card is to be hung up in the room at such a height that the third line from the bottom (the 20 ft. line) is about level with the eyes of the larger number of the children in the room when standing.

4. Mark off with crayon on the floor directly in front of the card distinct lines at distances of 3, 6, 9, 12, 15, 18, and 20 feet from the card.

5. To test the first grade pupils:

Use the gridiron or illiterate card. Test each pupil separately. First, have him come near the card, say 3 feet away. Show him in what direction the fingers of the characters point. Have him show with his hands how the characters point, his fingers pointing as the fingers of the characters do. As soon as he shows a clear understanding of these directions and responds readily, and also shows that he sees readily at this distance the small characters on the card, let him go back to the 20 foot distance. Point first at the large characters in the upper lines, then go down more or less rapidly to the 20 foot line. If he indicates the directions without hesitation, he may be recorded as seeing well at 20 feet. If he makes mistakes or hesitates markedly, let him advance to the 18 foot line or to such line as is necessary for good vision, and so record the distance.

The promptness of the response and oftentimes the facial expression are good indications of the degree of clearness of vision. When marked hesitation or strain is shown, he should advance to the next line.

The teacher will recognize at once the distinct advantage of having small children respond with movements of hand and fingers to indicate the directions in which the characters point rather than to say "up," "down," "right," "left." The teacher will also be careful to stand on the side of the card away from the light in order to avoid shadows upon the card.

6. To test second and higher grade pupils:

Use the alphabet card. Very brief explanations will be found sufficient. Sometimes the gridiron card may be used to

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advantage by way of verification in doubtful cases with children of the second and higher grades. Record the distance at which vision is reasonably clear and prompt.

7. Glasses. In case a pupil wears glasses, test and record his vision both with and without glasses.

8. In case a pupil's vision is below 18 feet, test each eye separately by having him cover the other eye in the case of larger pupils, and by covering the other eye for him in the case of smaller pupils. Record each distance and also the distance with both eyes.

9. Use regular school time for the work. Its importance justifies the time spent upon it. Let two teachers work together, each teacher testing her own pupils in turn. The teacher who is to make the tests first will send her pupils into the other teacher's room, where the pupils of the two rooms will sit together, engaging in such exercises as may be found practicable under the circumstances. The pupils are then sent, three or four at a time, into the other room to be tested. If too many pupils are present in the testing room at one time, there is a strong probability that those tested last will have some familiarity with the characters on the card and may remember certain characters rather than see them clearly. On the other hand, for each pupil to have seen one or two others examined is of advantage, as it saves time of explanation.

When this teacher has examined all of her own pupils, she will take charge of the combined classes while the other teacher examines hers, using whichever room is the more favorable. In some schools it may be found necessary to use the same room for several classes.

Test of Hearing.

The only test of hearing that seems practicable in a school room located in a building where other classes are in session is one which is essentially a school room test and in no sense an exact quantitative measurement, viz., the simple voice test. This is assuming that an audiometer is not available.

The simple voice test will reveal almost any defect of hearing that is sufficiently serious of itself to interfere with school progress.

Directions: Stand the pupil at a distance of 15 or 18 feet from the teacher, his back to the teacher. Instruct him to repeat each word the teacher pronounces. Give a series of six or eight words, one at a time, unrelated in meaning and employing differ-

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ent sounds. If they are correctly repeated, the pupil's hearing may be regarded as normal as far as his school room work is concerned. If he does not hear or mistakes the sounds, let the teacher approach until near enough to be heard, using the same tone of voice. The distance at which the words are heard indicates the relative condition of his hearing. Let the distance be recorded.

As was noted above, all the other data could be obtained from the school records or from the teacher's knowledge of the pupil. .

The results of the examinations made by each teacher were embodied in a report, on the forms prepared for this purpose, and these reports have all been summarized by grades. We have thus been furnished with a wealth of statistical data thoroughly organized and tabulated, the elaboration of which has already grown to the proportions of a monograph of considerable size. The purpose of this paper is to outline the method by which the work may be done. So much interest is being taken throughout the country in the study of backwardness or retardation in school children and so many questions are asked as to a proper method of investigating the subject, that it seemed desirable that an outline should be presented in order that we may have a basis for wider discussion and more widespread investigation.

In my judgment, whatever plan is employed, it must be one that will lend itself readily to the use of the class teacher. The time is not at hand when communities are in position to employ competent investigators to carry on this work, and there is grave doubt as to whether competent investigators are available in any considerable number outside of the schools. There are two reasons, then, why the work should be undertaken by the present teaching corps of the schools: first, because it can be done without delay, and, secondly, because this is the agency that is most competent to learn the task.

The problems involved appeal to all progressive teachers—they are in position to grasp the essential points at once; they are ready to co-operate in an intelligent effort to find a means of increasing the efficiency of their work. Simply to call their attention to the problem or even to emphasize the necessity of solving it does not suffice. What is needed is direct and specific instruction as to the series of ordered steps to be followed. The grade teacher has a most important part to play in this work, but it is not surprising that she plays no part when impossible tasks are vaguely suggested and no one stands ready to order and direct the first move.

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My experience has shown me that the teachers take up the work readily and very intelligently, and that it broadens the educational horizon of both teacher and superintendent. It shows us the child from a different point of view and begets an interest that is personal, vital, and pervasive. To have the work done by any one other than the teacher would be, in my judgment, to lose a large part of the benefit that should come to the school system as a result of the investigation.

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A CASE OF CHRONIC BAD SPELLING—AMNESIA VISUALIS VERBALIS, DUE TO ARREST OF POST-NATAL DEVELOPMENT.

By Lightner Witmer.

In March, 1896, a boy, whose identity I shall conceal under the name of Charles Gilman, was so fortunate as to attract to himself the personal attention and active interest of the grade teacher of a Philadelphia grammar school. Children in this boy's class, then designated as the Ninth A Grade, are supposed to be in their fifth school year. The normal age for this grade is assumed by the school system to be eleven years. Charles Gilman, however, was fourteen years old. If his classmates were in the fifth school year, and it is assumed that he entered school at the normal age of six, he was then in his eighth school year. He had thus irretrievably lost three years in eight, more than one-third of his school life. He was seventeen when, in 1899, he had completed the work of the secondary school, having taken eleven years to accomplish the work of eight. If we measure intellectual development in terms of the school progress of the average child, as appears to be justifiable, Charles Gilman at seventeen years of age manifested a retardation that amounted to an actual loss at the end of his school career of three years in eleven.

As a matter of fact, Charles actually began his school career before he was six years of age. He was, moreover, endowed by nature with somewhat more than average mental ability, as will presently be shown. The public funds, the time and labor of the administrators of education, had been expended in his case with a return about one-third less than we have a right to expect from the results of school instruction. My report will show that the retardation in school work and the relative ineffectiveness of the school system in the case of this boy were due to causes that could have been removed early in his school life. It indicates the necessity for the assumption of new functions by the school authorities in order to meet cases presenting special difficulties.

The bare fact of retardation, when once established, as in the case of Charles Gilman, should be sufficient to arouse the inquiring attention of the grade teacher and principal. It was not the general retardation, however, that attracted his teacher's attention, but the specific inability to acquire the correct spelling of English words. To determine the causes of this persistent bad

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spelling and to obtain assistance in teaching him to overcome his deficiency, his grade teacher, Miss Margaret T. Maguire, brought him at the age of fourteen to the laboratory of psychology.

In view of his teacher's statement of this deficiency, my examination naturally had reference to his trouble in spelling. I asked him first to spell the word "crowd." He spelled it *c-r-o-u-d*. Without telling him that this was wrong, I asked him to spell the word "loud"; he gave this correctly, *l-o-u-d*. If *l-o-u-d* spells "loud," the boy who says *c-r-o-u-d* spells "crowd" is not deficient in intelligence, however insufficient may be his training in orthography. I then asked him to spell "crow." He gave it correctly, *c-r-o-w*. I told him to put a *d* at the end of this word, and asked him what the letters *c-r-o-w-d* spelled. He told me they spelled 'crowed." Again he had made a perfectly logical inference from a combination of the phonetic elements of the English language.

In this and many other tests, he showed himself to be a boy above, rather than below, the average in intelligence. He was able to reason; he understood questions and gave satisfactory answers to them, although the questions involved matters of fact that had probably never before been brought to his attention. His powers of expression through spoken language were good.

His reading, however, was as deficient as his spelling. Indeed, in the accepted meaning of the term, he was absolutely incapable of reading a single sentence. The only words that he was able to pronounce without first spelling were "an," "the," and a few other monosyllables of not more than three letters. All other words were spelled letter by letter before he was able to comprehend what the symbols stood for; the hesitation was noticeable as he articulated, either to himself or aloud, the name of each literal symbol before he combined the sounds in the utterance of the words they represented. Even such a simple word as "house," which he must frequently have met, he was unable to recognize on sight.

Thus we have to do with a boy of fair intelligence and general information commensurate with his age, whose progress in written language was not greater than that usually attained by children in the second school year, and whose reading was no better than that of a child at the very beginning of the acquirement of this function. He read not only with great slowness, but with many mistakes. He never read for pleasure, and never took up a newspaper to see the news. That he got on as well as he did in school work, despite this retardation in written language, was a tribute to his general intelligence.

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By questioning him and his teacher I learned that his spelling lesson was prepared at home with the help of his mother and sister. Although he spent hours in preparation, he would misspell more than half of the lesson when dictated to him the following day. When copying from the blackboard his teacher reported that he could never take down more than one syllable at a time, and his copy showed many blunders. Thus, he would write *cone* for "come," and *hone* for "home,"—a blunder the significance of which I did not appreciate at that time.

It appeared to me that the retardation in spelling and reading might be due to some special disability of memory. It is well known that many children have no ear for music, and are incapable of remembering accurately the sequence of musical sounds. In other respects, the memory for sounds may be good. This boy was shown by appropriate tests to have no deficiency in remembering the sequence of the sounds of letters. He possessed also an adequate visual memory for simple geometrical figures and for colors. Thus he could shut his eyes and imagine a square, or the color blue. He could also visualize, according to his statement, the appearance of separate letters, but he could not visualize the appearance of words. It was only with the greatest difficulty that he could imagine even the short word "cat" as it looked when written or printed.

Excepting this difficulty in reading, writing and spelling, geography was the only school subject that gave him trouble, his teacher thinking that he lacked the visual memory necessary to locate places correctly on the map. But, as an offset to this apparent deficiency in visualization, he was good at drawing, which would seem also to require a degree of visual imagination. In history, he was reported to be remarkably good, as he followed the logical sequence of events readily. He was apt in science work, being quick at finding causes for observed effects.

My examination had, therefore, revealed,—

1. That he was equal to, if not above, the average boy in general intelligence.

2. That he was able to express his thoughts adequately in spoken language.

3. That he had a good memory for sounds.

4. That he had a good visual memory for color and simple geometrical figures and even for separate letters.

5. That he had no visual memory of words, and could not read.

6. That he spelled correctly only such words as he could spell from the sound of the component letters.

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When I first saw Charles, he was a fine-looking boy, fairly strong and healthy, rather large for his age, for he came of a family in which the men averaged six feet. He was of German descent; his parents were educated and provided amply for the care and education of their children. The boy was well-mannered and respectful, evidencing satisfactory home training. There was no history of any physical disorder, disease, or accident, likely to account for his defect. His pedagogical history showed that he had been first sent to a public kindergarten, and from there he proceeded to the primary school. Here he did not get on well, and his mother, thinking this was on account of the teacher, placed him in the kindergarten for another year. From there he entered the public school system again, and passed on from grade to grade, until at the time I saw him he had reached the second half of the fifth school year, being in the Ninth A Grade, with a record of having failed of promotion three times. His teachers affirmed that he was serious and industrious in all the work of the school.

I first thought that inefficient school training was responsible for the deficiency in spelling and reading. This conclusion seemed to be evidenced by the report of his teacher, which showed that since the second school year he probably read on the average not more than one minute a day. He prepared no reading lesson at home, and had not taken a reading book home since he had left the primary school. He had never written a spelling exercise; he studied his spelling lesson orally. When we undertook his training he was compelled for the first time to write his spelling lesson, and to copy over and over again words that he had misspelled.

These considerations suggested the necessity of a special training of his visual memory to develop correct habits of spelling; in order to improve his reading, he was given exercises also in the rapid apprehension or perception of words. During the spring of 1896, the effort was made to give him this training in connection with his school work. His grade teacher, however, was not able to devote sufficient time to this one boy to make an effectual attempt at overcoming his deficiency. In the fall of 1896, he began to come regularly to the psychological laboratory for instruction in spelling and reading. Pedagogical treatment had no sooner commenced than his absurd mistakes in reading (for example, he would read "was" as *saw*, "weather" as *water*), and his uncertainty in pointing rapidly to individual letters led me to suspect some ocular defect. I soon discovered that the

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steady fixation of a finger, especially when held within a distance of three feet, caused the finger to appear double. If I held up two or three fingers before him at an easily recognizable distance, he showed great difficulty and hesitation in distinguishing the number. Only after my discovery of this fact did he inform me that in trying to write, the letters of a word he was tracing would frequently double under his pen; in looking at a printed page, letters would often double and the page usually looked blurred and indistinct. He had never mentioned this trouble to his teachers or parents; he no doubt thought it was a natural phenomenon of vision. No one suspected an ocular defect, for his work in drawing at school had been good, and at home he exercised considerable skill in fine embroidery work. I did not myself inquire into the possible existence of an eye defect until I began to teach him to read and spell. Superficial tests of each eye separately had shown that his vision was not sufficiently below normal to account for his deficiency in spelling and reading. I appreciate at the present time what I may perhaps be pardoned for having been slow to recognize at the beginning of my work with these children, that the school record alone was sufficient to justify the recommendation of a visit to the oculist. In fact, I would venture this opinion to-day in the case of a boy who persistently drops a stroke in the writing of certain letters, as for example the *m* in "come," especially if this occurs in writing from a copy before him.

As soon as I discovered the condition of double vision, he was sent to Dr. Posey, who found that the boy had practically normal vision in each eye, but that he saw double because he lacked the power to direct the two eyes co-ordinately upon the same point in space, *e. g.*, a letter, the left eye looking lower than the right. This was due to a defect of the external muscles that control the movements of the eye-balls in their sockets. The muscular insufficiency was corrected, as nearly as was possible at the time, by the wearing of proper glasses. This improved his visual perception. He was now able not only to see clearly individual letters, but also to distribute his visual attention over several words.

To see a word or a phrase requires a greater mental and physical effort than to see an individual letter. By making a great effort, he had been able to control the co-ordinate direction of the two eyes, so as to see a letter single, even though only for a moment. The least fatigue or relaxation of visual attention allowed the eyes to deviate and caused the letter to appear double. When he attempted to distribute his attention over an entire word or a group

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of words, he could no longer make the effort necessary to overcome the muscular weakness and preserve the co-ordinate direction of the two eyes. If the muscular defect had been greater, it would have been better for him; he would then have had a permanent squint and learned to overlook or suppress the images of one eye, as I believe he must have done when exercising his skill in embroidery and drawing.

Visual perception was now approximately normal, but he could not yet read or spell any better than he had done before. Visual imagination was still in the same state of retardation. It is through the training of visual memory and imagination that we acquire facility in reading and spelling. Reading, for example, requires more than good eye-sight: the posterior lobes of the brain (the visual centers) must be stocked with the memories of words and trained to the ready apprehension (called technically apperception) of the literal symbols of language. The brain of this boy, so far as reading and spelling were concerned, had received practically no training during his entire school career. He was fourteen years of age, but the centers of the brain which are concerned with the function of spelling and reading were as undeveloped as those of a child of six or seven. It was as necessary as ever to teach him to read and spell, but this instruction could be undertaken with some hope of success. He could now see words, and his brain could be trained to store and use the visual images of the words that he saw.

The special training, which had been interrupted during the examination and treatment of the eyes, was again undertaken through weekly visits to the psychological clinic, and almost daily instruction by Miss Maguire. For six months a persistent course of instruction was given in rapid reading, in order to induce him to "jump" at words without previously spelling them. Some attention, but not quite so much, was given to spelling. It seemed to me that the ability to read was more essential to continued progress in the school room than the ability to spell. A careful record was made of the work undertaken and accomplished from week to week and frequent tests were given to determine the amount and character of progress. Even after regular treatment under my direction had ceased, he continued to come to the laboratory at intervals for examination. I am able to present the following brief history of progressive improvement by selecting a few significant details from my recorded data.

The reading lessons began in the latter part of November. At first the fourth reader was used. In two hours he had read only

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two pages. It was still necessary for him to spell every word before its recognition. The effort to get even a short word without spelling it was accompanied by great mental fatigue. In the second lesson an easier reader was employed in order to familiarize him with such words as *could, may, would, should, have,* etc. In this lesson, he recognized at sight *had, am, spring* and *gave. Was,* however, was frequently called *saw,* and *for* was read *of.*

In the lesson of a week later, the tendency to spell phonetically was slightly less marked, although no decided improvement was to be observed. A trial of Hawthorne's "Wonder-Book" proved this simple text to be too difficult for use as a reader. In copying from his note-book, he wrote *soas-bubble* instead of "soap-bubble." He took one minute to discover his mistake, although he wrote *soap* correctly when asked to write the word separately.

On December 7th, he recognized at sight *happy* and *following.* This was the first successful attempt to grasp at sight a word of more than one syllable and was considered an encouraging improvement.

On December 15th he misspelled six of fifteen words, though they were all words that had occurred in his reading lesson of the previous days. This, however, was thought to be a very flattering tribute to the methods employed, in view of the number of words he had previously been accustomed to misspell after careful preparation.

On December 19th he was tried without his glasses. He was compelled to spell over a large number of words and seemed unable to phrase at all. The word "leaves" he called *heaves* three times, and was surprised when he found that the first letter was *l* instead of *h.*

On January 19th he read in three minutes 203 words with his glasses and 120 without them.

On February 4th he read a page and a half in eight minutes. In reading the last half page a second time he stopped only four times to spell words, reading otherwise in a natural and easy, though slow, manner. On this day he recognized at a glance and pronounced correctly all of the following words: *observe, depends, discoveries, qualities, progress, creature, knowledge, house, success, products, beautiful.*

On February 9th he was tested by exposing single words for one second only. The words *service, poor, never, master, notice, anywhere, scarlet, again,* he recognized on a single exposure. The words *interested, busied, warming, reflect, leaned, require,* were recognized in two exposures, and the word *applaud* required three.

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In March his improvement in spelling was very marked and his ability to read understandingly greatly advanced. He reported with elation that he had even read to members of his family something of interest from the newspapers.

In April his special training ceased, because other interests occupied the time of his instructors.

He was given exercises for home practice, and was directed to read aloud, either to himself or to others, provided he could persuade them to listen to him. He came to the laboratory after this only at infrequent intervals. When I saw him in May, he told me that he could get his lessons much more easily than he used to. He reported that he was beginning to read at times for pleasure, and his grade teacher, of whom I inquired, said that his spelling was somewhat improved. I noticed that in reading he often hesitated when he thought he did not know some long word, but if I insisted on his making the attempt to pronounce it without spelling, he would be surprised to find that he could read the word perfectly. He still showed at this time some of the curious confusions and transpositions that I have observed in many cases of this kind. Thus he would read "especially" as *particularly,* or vice versa. In spelling the word "that" he would write *htat.*

When seen on October 20, 1897, he complained that his eyes were not much better than when he first put on glasses. Examination revealed the continued presence of rather severe ocular symptoms, and he was again sent to the oculist, who found it necessary to perform an operation.

On December 31, 1897, he showed a little, but not much, improvement over the stage of development that he had reached the preceding April, when the special training ceased. He required five minutes to read 268 words of an editorial in a newspaper printed in not very clear type. He was able, however, to read instantaneously many difficult words, as *resolutions, opposite,* etc. Boylike, he had neglected to follow out my instructions to read aloud daily and write out his spelling. As a spelling test, he wrote a paragraph of an editorial, which is reproduced with the spelling of each word as he wrote it down from dictation.

We *aften* hear it said that such people have *onely* themselves to *blaim* for the irksomness of their *existance.* Strong and *enegeratic* natures can scarcely *fanin* (fathom) *weekness* and certainly find it hard to *simpathise* with or *exchuse* them. They lay the entire blame to the *indervidual* that suffers himself to be thus overcome and if they pity him it is with a pity largely *minghed* with contempt. Now while it is *undoutaly* true that much of such misery may be distinctly traced

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to *suflfiness* (selfishness) or shallowness or *lethoge* (lethargy) of the *indevedual* it is also true that others that have come into personal *contract* with him generally have a *decide* share in the responsibility.

On January 15, 1899, he was seventeen years of age and in the Twelfth Grade, from which he expected to be promoted in June. He had not failed of promotion from the time when we undertook his training. He reported that he did not find reading very difficult, that he was fond of Cooper's novels, and he spoke with enthusiasm of a poem which he had recently read. He, however, did not think that he could read well enough to ask anyone to listen to him.

After graduating from the grammar school in June, 1899, Charles went to a school of industrial art, where his talent for drawing enabled him to do excellent work in one of the textile departments. He was compelled to leave the technical school owing to the fact that he developed tuberculosis of the muscles and joints. When I saw him on July 9, 1903, his physical condition was pitiable. He was over six feet tall and weighed only 120 pounds. He was compelled to walk with a cane, and walking fatigued him greatly. In his disabled condition, he found a great deal of pleasure in his recently acquired ability to read. He said that he preferred to read a book himself to having someone read to him. He had read Dumas and Balzac, and claimed to have read a novel of about 250 pages in the course of an afternoon. He no longer needed to spell any word letter by letter before he could pronounce it; if he had difficulty, as sometimes happened with long words, he could usually get them by combining the syllables. In reading a long and rather difficult passage, he failed completely with only one word, "unctuous," and this he could not pronounce even after he had spelled it. His conversation was that of a very well-informed and entirely normal young man. A letter written to me about this time was well phrased, contained no mistakes in spelling, and the handwriting was good.

In January of this year, he died of the malady from which he suffered during the last six years of his life.

I think it well to consider a few points that present themselves in the study of this case and the conclusions that may be drawn from them.

It is not unusual to find a case of chronic bad spelling cited to instance the inefficient work of the school system, or to demonstrate the ineffectiveness of some special method of instruction. I cannot make too emphatic the statement that a single case of bad spelling, or even many cases, does not furnish a legitimate

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basis for the criticism of school systems and methods. For one boy who is backward in learning to spell, there are fifty boys sitting with him in the same class room who acquire this facility readily.

Although the grade teachers and school system cannot be held responsible, there are underlying causes which may be discovered and removed, and these causes are operative in a large number of cases. Thus, when this boy was in the Twelfth Grade, the grade teacher reported that there were five or six other boys in the class as deficient in spelling as Charles Gilman.

Some satisfactory method must be devised for the discovery of these cases and for the study of the causes of retardation in each individual case. Until such a system is devised, the most effective means to discover and treat these cases is a rigid insistence upon the requirements of promotion. If these children are held in a given grade until they have performed the work of that grade, no matter how many times they fail of promotion, teachers, principals, superintendents and parents will awaken to a recognition of the problem that confronts the school authorities in certain cases and a realization of the possibility of its solution only through the study and special training of the individual child. This will lead necessarily to the formation of ungraded classes. In time it will be found that every school with an enrolment of one thousand children requires at least one ungraded class. These classes should be in the hands of especially expert teachers; the number of pupils to one teacher should be limited to not more than fifteen or twenty, and the object should be to study and train the children with reference to their special deficiencies. If Charles Gilman had been kept in the first or second grade until he had been taught to read as well as a boy in those grades should read, his ocular defect would have been discovered. If the mother or teacher had possessed the knowledge and experience that the study of cases like his will give, he would have been sent early in life to the oculist, his defect of vision could have been entirely corrected, and he would have made normal progress through the grades. His history shows the presence of ocular deficiency from the first school year. Not having been then removed, by the time he had reached fourteen years of age it was too late for him to make up all that he had lost. He never acquired normal facility in reading and spelling. He was in the position of the adult who endeavors to acquire a new language. Except in very unusual cases, no one can acquire, after adult age has been reached, the same facility and finish in

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a foreign language that he has attained in his native tongue or in a foreign language learned in early childhood.

The case presents certain points of psychological and physiological interest. A boy of fourteen years is shown to be deficient in spelling, in reading, and, as appears from my record, in the intellectual apprehension of ideas obtained from reading. There were no symptoms, however, of other deficiencies of intellect. The study of injuries to the adult brain shows that if the injury affects a definitely restricted portion of the brain, the result may be a loss of the ability to read, with the preservation of other functions connected with the faculty of language. The patient who has lost the ability to read, a condition known as *alexia,* may be quite able to understand others when they speak or read, and to express his ideas through articulate language. This partial loss of the faculty of language is the result of the loss of the acquired memories of the visual symbols of language. *Aphasia,* as a loss of the faculty of speech is called, is in these cases a partial *amnesia,* or loss of memory. In some cases the amnesia may be limited to the loss of a few words only. In other cases it extends to all letters and words. This boy had not lost any of his memories of words. He had never acquired them, and seemed incapable of acquiring them in a large and sufficient measure. His defect of language did not extend to the memories of words which he heard or which he himself spoke. He understood perfectly spoken language and expressed his ideas in appropriate articulate speech. He manifested what I think we have a right to call a visual aphasia, dependent upon an arrest in the development of visual memory for words,—that is, he showed a *visual verbal amnesia.* His visual memory for other objects than words, and even for letters, so long as the letters were not to be remembered in a given sequence, was good. The degree of visual aphasia from which this boy suffered at fourteen years of age and from which he had not entirely recovered at the time of his death, is quite normal in a child of six or seven years. This condition in the normal child is overcome by training, an important feature of which is the stocking of the brain with the visual memories of words. The history of the case which I have recited presents a boy whose brain did not acquire these visual memories, and could not receive the training necessary to a normal exercise of the visual functions of language.

The cause of this failure to acquire the visual memories of words I have already indicated. The clear visual image of the word is essential for the storing of the brain with verbal mem-

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ories and for training in the visual functions of language. His ocular defect made the formation of clear visual images of words impossible. When this defect was removed at fourteen years of age, the formative period was past, the time when the brain most easily retains and elaborates its impressions. The arrest of visual development for a period of nine years could not be entirely overcome at this later period by even the best of training. Many physical defects, which are in no way directly related to cerebral deficiency, will make it difficult or impossible for the brain to pass through the various stages of normal development. Defects of hearing and naso-pharyngeal obstruction, especially when they lead to defects of articulation, frequently cause a retardation or arrest in the acquisition of the articulatory, auditory and even visual elements of language. I would characterize the condition of Charles Gilman as a case of visual aphasia, or visual verbal amnesia, due to an arrest of post-natal development, the result of a defect in the sensory visual process.

There is, however, another possible explanation which has been suggested in a number of cases that I have seen. The visual centers of a child of six years must not only be subjected to training in order to evoke normal development, they must also be susceptible of training. Some brains may be congenitally incapable of developing the normal visual functions of language. If such cases exist, the condition is exactly analogous to one that is frequently found with respect to the function of hearing called musical audition. There can be little doubt that many otherwise normal brains give evidence of lacking musical capacity. Those who possess such brains, we say, lack a musical ear. It may be that perfectly normal children lack the spelling eye, as other children lack the musical ear, and that the former can be as little trained to spell correctly as the latter to play or sing; but if such children exist, I have yet to meet the first clear case. My experience leads me always to examine the eyesight of a bad speller who is otherwise free from mental or physical defect and who has enjoyed satisfactory school training, even though such examination appears to be unnecesary and a mere matter of form. I have found in such cases that the chronic bad spelling is invariably associated with some form of defective vision. I am not convinced, however, that the bad spelling is necessarily caused by the eye defect.

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REVIEWS AND CRITICISM.

Notes on the Examination of the Eyes of 1,048 East Cleveland School Children. Leigh K. Baker, M.D. Ohio State Medical Journal. February, 1907.

Dr. Baker's report is especially interesting because his conclusions as to the best method of examining the eyes of school children are diametrically opposed to those reached by Superintendent Bryan in the current issue of the PSYCHOLOGICAL CLINIC. A comparison of the two papers suggests that here is an opportunity for profitable discussion and further observation, which may yield still more valuable results.

Dr. Baker was engaged by the Board of Education of East Cleveland, a suburb of Cleveland, Ohio, which has a distinct village government of its own, to make an examination of the children's eyes, and recommend to the parents whatever treatment was found to be necessary. A brief of his recommendations was also filed with the superintendent of schools, who followed up the cases requiring attention. The examinations were held in the school buildings, a darkened room being used for the ophthalmoscope. The results showed that of the 788 elementary pupils, 693, or 88 per cent, had practically normal vision, the remaining 12 per cent being abnormal. Forty-four pupils, or 5.6 per cent, were already wearing glasses. By the time Dr. Baker's paper was written, a few months later, the superintendent was able to report that 8.5 per cent of the elementary pupils were provided with glasses. Of the 131 letters written to parents of these pupils, 79 suggested treatment or further examination for glasses, or both. The remaining letters had reference to the hygiene of the eyes.

In the high school the proportion of pupils with abnormal vision was somewhat greater, being 39 out of 260, or about 15 per cent. A number of pupils were found to be wearing glasses which were unnecessary or worse, and Dr. Baker thought it advisable to give a word of personal advice to these older pupils, instead of writing to their parents. To about one case in every four a suggestion of value was made.

So many cases of eye inflammation were found (22.4 per cent of the total number) that the superintendent instructed the teachers to use more care in the adjustment of window shades and in the seating of the pupils.

In conclusion, Dr. Baker's experience, both in the Cleveland city schools and in this recent work in East Cleveland leads him to believe that the teachers are not competent or sufficiently interested to make the examinations of their pupils' eyes, even when stimulated by the desire to win a superintendent's favor and thereby secure promotion. To be lasting and of much value all such work must be done by people especially trained to do it. With a good assistant, an oculist should be able,

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after a little practice, to examine over a hundred children during the five hours of a school day. In towns and small cities the expense of employing a legally qualified oculist for a week or two each year would not be prohibitive. In larger cities the problem is different, and here, Dr. Baker believes, the boards of public health must take up the question. They should establish school hygiene departments to safeguard the physical welfare of school children, and specialists should be employed.

Types of Children. D. P. MacMillan, Director of Child Study, Chicago Public Schools. Educational Review, Vol. XXXIII, No. 3, March, 1907.

By "child study" the author designates a scientific inquiry into the life conditions of children. A branch of child study is concerned with the mind of the child, its natural order of growth, and the various conditions which effect a change in its development. In a certain wide application of the term, psychology concerns itself with the descriptive explanation of mind wherever found. But in a narrower and strictly proper application of the term, standard psychology deals with the mind of the normal adult human individual,—normal in contradistinction to abnormal, human as opposed to animal, adult as contrasted with the child, individual as differentiated from the collective or group mind. This normal adult psychology furnishes the standard to which the mind of the child and the mind of the aged must be referred.

From a body of scientific facts comprising the most general truths concerning each of these classes of individuals,—the child, the adult, and the aged,—must be ascertained the prevailing type of the class, and also the differences exhibited by individuals.

In order to determine this normal or average type of the child, it is important to find some fixed standard by which to grade the individual children. A distinct step in advance in this direction was made by the application of fixed tests to a large number of children.

The author then enumerates the various points of view from which children have been studied and classified; beginning with the methods based upon the most fundamental processes and thus giving the more natural reactions of the child, he passes on to those which are based on qualities that are the result of education and environment. First in this series is described the purely physiological method of Dr. W. S. Christopher, which groups children according to the organic susceptibility of their bodies for nutriment. Then follow in regular order the classifications based upon differences in reflexes and automatisms, on differences in instincts, in the emotions, and finally in ideas.

When the average type is established according to one of these classifications, two sub-types are discovered, the first comprising those children markedly above, the second those below the average. The sub-types he further classifies as follows: the first, precocious children,

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talented children, and geniuses; the second, idiots of the first degree, idiots of the second degree, imbeciles of the first degree, imbeciles of the second degree, subnormal children, and backward children.

He also finds useful a further classification from the social-economic point of view, based upon an estimation of what the children may become in adult life: (1) those unable at maturity to contribute to their own support; (2) those able under direction so to contribute; (3) those fully able, under special training, to become self-supporting; (4) those who will be not only able to support themselves, but others; (5) those who at maturity will be in a true sense contributors to the social welfare.

NEWS AND COMMENT.

The Visiting Nurse Society, of which Mrs. Henry C. Lea has been the president and an active inspiration since its organization in 1887, has recently advanced to a new sphere of usefulness. In 1903 it co-operated with Dr. Martin, the Director of Public Charities, in his endeavor to carry out a careful medical inspection of schools by delegating Miss Anna Stanley, one of its regular nurses, to assist the medical examiner in the systematic inspection of the Mount Vernon School, Third and Catharine Streets. This school being situated in the heart of the foreign district, and the pupils being almost exclusively children of poor Italian, Russian and Polish immigrants, the field offered unusual opportunities for usefulness.

In 1905 Miss Stanley's work was extended to the five schools in the fourth school district, and has lately been further extended to include the Wharton Combined School in the second district. She has now from 6,000 to 7,000 children under her supervision. She is supported by the association, but directed by the medical inspector of the public schools. She visits the schools daily, three hours in the morning and two hours in the afternoon. The medical inspector recommends treatment and gives written instructions, which are left at the office of the principal, with information and directions as to whether the case is to be visited by the nurse at home. The nurse each day obtains from the office of the principal these instructions as to the disposal of each case. At each school a small room is set aside for the work of the nurse. Here she has a drug closet containing all necessary supplies. When necessary she visits the homes of the children, gives treatment and instructions, and endeavors to obtain the co-operation of parents, thereby ensuring successful and more prompt results. When necessary, children are taken to dispensaries after school hours or on Saturdays, and some have been brought to the psychological clinic at the University of Pennsylvania for mental examination.

The Visiting Nurse Society is furnishing the financial support for this work in order to demonstrate what the city school system should

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do for the physical care of the children. It is hoped that it will be able to continue the work until a satisfactory system has been adopted by the city; this has already been done by New York, where trained nurses are provided for most of the public schools. The kindergartens and the special schools for backward children were established in Philadelphia as a result of similar pioneer work by interested societies.

The first congress of the School Hygiene Association of America will be held in Washington, D. C., on May 5 and 6, 1907. The formal organization will be perfected, a constitution adopted and a scientific program presented. One hundred and thirty-nine American men who have become distinguished through their services in the advancement of our knowledge concerning the health of children, or through the advancement of our practice in conserving health in the conduct of schools and school systems have been nominated as founders of the society by a committee on organization of which A. T. Cabot, of Boston, is chairman, and Luther Halsey Gulick, of New York, is secretary. It is the intention of this society to co-operate with the Second International Congress on School Hygiene, which meets in London, England, August 5 to 10, 1907.

The American Association to Promote the Teaching of Speech to the Deaf conducts a teacher's bureau, which reports that it has had in the past year more calls for teachers trained and experienced in the oral method than it has been able to supply. A demand exists for teachers of successful experience, competent to take charge of oral departments. It is likely that this demand will increase, and that a call for teachers trained in the oral method will be heard from the public schools as soon as further study of retardation in speech makes evident to the school authorities the necessity of having some teachers skilled in overcoming speech defects. The department of psychology in the University of Pennsylvania had received several inquiries as to whether instruction in articulation work could be obtained this year in connection with the Summer School. If the demand seems to warrant it, a course in articulation, supplemented by laboratory work in the physiology and psychology of speech, will be offered.

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The Psychological Clinic

VOL. 1. No. 3. MAY 15, 1907.

THE FIFTEEN MONTHS' TRAINING OF A FEEBLE-MINDED CHILD.

BY LIGHTNER WITMER.

The little girl who is the subject of this psychological sketch came into the world a delicate but normal child. For the first fifteen months of her life, the child developed normally in body and mind. She cut her first tooth at nine months, walked at one year, and in her fifteenth month could say, "papa," "mamma," and "kittie." She was at that time a lovable, bright and active child. Her sisters and three brothers have always been mentally sound and fairly healthy. Her parents were intelligent and well-to-do.

When fifteen months old, she passed through eight weeks of severe illness, having in rapid succession, typhoid fever, pleurisy, pneumonia and chicken-pox. Though her life was saved by medical skill and careful nursing, this protracted period of illness reduced her to a weak, emaciated and helpless infant. The power of voluntary movement was lost for all but the simplest functions; not even the ability to creep remained. Nutrition was seriously impaired, as the condition of her skin witnessed. The development of her mental faculties was abruptly arrested. Physical growth almost ceased. The two following years were marked by epileptoid convulsions, which began during her severe illness. These convulsive attacks affected her health and seemed to prevent mental progress. At the end of two years they became less severe, but had not ceased, when, in her sixth year, she was placed in Miss Marvin's care for mental and physical training. Some improvement in walking was observed during the fourth and fifth years, and feeble though unsuccessful attempts had been made to talk.

The sixth year of the child's life found her an idiot of most repulsive appearance. An open mouth was flanked by flabby, puffy cheeks. Above were heavy eyes and a bridgeless nose, while below a weak chin was sore from constant drooling of saliva. The teeth were much decayed and the odor from the nose and

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mouth was most offensive. Her skin and the boils from which she was never free evidenced impoverished nutrition. Her muscles were weak and her movements uncertain and inco-ordinate. She could not take more than a few steps without falling to the ground, and for days she could neither crawl nor even sit upon the floor. She spent hours whining, or dull and silent, in her mother's arms. Her personal habits were such that she had to be cared for like an infant. Her wants were made known by crying and other simple emotional expressions. The nursing bottle, which she continued to use up to the day that she entered Miss Marvin's home, seemed to be an absolute necessity for procuring sleep.

No attempt had been made to control her by the force of an external will, much less to develop her own powers of self-control. She was exceedingly stubborn either by virtue of her natural disposition or in consequence of continual indulgence. If she saw any evidence of an intention to thwart her wishes, a violent temper manifested itself. She would dash to the floor any object within reach, stamp her feet, and jabber away unintelligibly, but yet in a most threatening manner. When tears came in the outbursts of rage, they introduced hours of crying and sobbing. She violently resisted bathing, dressing and all attentions to her personal welfare. When evening came, she was allowed to play around the room until, fatigued, she fell asleep. She was then undressed without being fully awakened and put to bed.

Fortunately, she possessed an affectionate disposition. Her love for her doll, which was shown by her manner of holding and patting it, proved her not devoid of an incipient maternal instinct. It also showed that she possessed to some extent the instinct of play and imitation. She was fond of music and could hum two tunes with moderate success. She observed the moon or a bright light with evident delight. Affection, play, imitation and æsthetic sensibility are powerful aids in the development of even normal children.

Articulate language was restricted to the word "mamma," but even this word was uttered in a way that manifested little comprehension of its meaning. Simple questions like "where is the pretty light?" "where is the moon?" were apparently understood, for she would direct her gaze toward the designated object. Her ability to understand language seemed therefore somewhat greater than her facility in employing it. Nevertheless, as the years passed, she gave no sign of improvement, in either the understanding or expression of language. She never babbled, playing at

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articulation, as normal children do; her nearest approach to such play was a sound in the back of the throat resembling the grunt of a pig. She often jabbered in anger and sometimes in play, but the performance was always very crude and there was no increase in precision of execution. Intellectually she had not progressed beyond the stage of development reached at the time of her first illness, that is to say, she was in mind little more than a year old.

As time brought no amelioration in her mental or physical condition, the parents had recourse to the skill of the neurologist. On the advice of Dr. S. Weir Mitchell, the child was placed, on December 3, 1896, in Miss Marvin's home for defective children, where her training came under my observation as consulting psychologist. It was the opinion of all who saw the child that her condition gave practically no hope of mental improvement. Special training was recommended with the hope that it would render her more amenable to hygienic and other simple requirements of daily life.

The day she entered Miss Marvin's home, without suggestion on the part of any one, she stopped using the nursing bottle which had hitherto been her inseparable companion. The cause of this important but unexpected improvement is not easily explained. Possibly the journey to Philadelphia, the new environment and the intimate association with a personality other than the mother, *shocked* the child into a sudden manifestation of normal progress. Such phenomena have been observed in normal children. For example, I recall the case of a child of five years, apparently devoid of imagination and imitation, who outdid his companions in fanciful and imitative play on being brought from Boston to live in Philadelphia. It is difficult to believe that the atmosphere of Philadelphia is more stimulating to the imagination than that of Boston, and I must, therefore, attribute this long step forward to the influence of the shock of the journey and the new environment. Such shocks seem at other periods of life, notably at adolescence, to usher in unwonted mental habits and attainments.

The first training of the child had as its object the establishment of what may be called the "pedagogical rapport." The child must obey the will of the instructor or it will become the sport of its own caprices. Discipline, guided by tact and knowledge, is, therefore, a necessity with mentally feeble or backward children. The parent of a defective child moved by sympathy for its condition will commit the fatal error of indulging it more than the normal child. This excess of tenderness is a serious obstacle in

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the way of the child's progress. The feeble-minded child, for the very reason that the usual motives to disciplined behavior are less likely to guide and control its impulses, needs all the more that firmness which develops obedience to the instructor's will. The love of pleasure and the fear of pain in whatever guise they may present themselves to the mind, are after all the two motives by which every parent or instructor gains the child's affection, disciplines its will and establishes the "rapport." Neither motive can be overlooked, nor can too much discretion be shown in the choice of the media through which an appeal is made to the one or the other. The sugar plum and the rod may be preferred by some; the kiss and its denial by others; both sets of alternates appeal to these two primitive emotions. Constant nagging, threatening or slapping should be discouraged, especially with nervous and fretful children, yet when a slap of the hand is needed, it should be hard enough for the pupil to know that the teacher herself is not a creature of wavering purpose. The child should learn to fear punishment and to love the instructor. No child is of such feeble intelligence that it cannot be won and held by affection; but the display of affection, to be effective, must be under the inhibitive guardianship of the reason and judgment. Indiscreet affection will smother with an embrace the small spark of self-control the child may have originally possessed. The mother of a defective child, however, can hardly be held blameworthy if maternal love and personal sensitiveness make her unable to inflict misery upon herself through the firm treatment of her child.

The first attempt to control this child demonstrated the effectiveness of a simple pedagogical remedy. In a fit of anger, she took a cup from the drawing-room table, and threw it against the wall. The instructor took her to where the cup lay broken, and, pointing to the pieces, slapped the offending hand. Apparently stunned by the newness of the treatment, she hesitated long enough to show that the cry with which she ran to her mother, who was present, was one of anger and not of pain. At the instructor's suggestion, the mother exercised sufficient self-control to manifest no active sympathy. The result was that the child never again touched with destructive hand an object upon the table. A similarly rapid improvement was shown after her old habit of going to sleep on the floor was broken. When bedtime came she was undressed and put to bed. She cried lustily for a time, intermittently jumping from the bed only to be put back again. Less than a week had passed before she could be undressed, bathed

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and put to bed without offering any greater resistance than is the natural right of every child.

Her affectionate disposition and love of music were powerful aids in forming habits of obedience. She learned that if she were naughty she would not be sung to or petted. At first the wish to please her instructor was doubtless the result of a selfish interest in what the instructor could do to minister to her comfort or pleasure. But soon this interest changed into a wish to please for the instructor's sake; then appeared the close conning of the instructor's face for signs of the displeasure or approval she might have caused. Obedience was then no longer a matter of enforcement. The child obeyed because it could not help carrying out the wish that its awakening powers of observation saw pictured on the teacher's face. In the spring when the child was advancing in the comprehension of words by leaps that were often surprising, an incident occurred illustrating the power of the teacher to make her will the effective agent in determining the child's action. The child had been insisting, in her characteristically obstinate fashion, upon having her own way and was spoken to by Miss Marvin in the following words: "Do you know what naughty girls have to do? I want you to go into the house just as fast as your little feet can carry you, and right upstairs to bed." It was not expected that she would understand, much less obey, the command, and the words were uttered more for the moral effect of a reprimand couched in gesture and tone than to give an order for execution. The child, however, did not wait for the nurse who usually accompanied her, but turned toward the house without a negativing look or gesture, and did as commanded.

Complacent affection, on the other hand, yielding to a child's every whim, defeats itself. Whereas in a short time the instructor had won the child's interest, obedience and love, the mother had failed to gain any of these, because she herself lacked the determination necessary to awaken in the child's mind a motive strong enough to dominate its passing fancy and emotion. The mother must have been for the child merely a source of sensuous gratification, or a willing slave to administer to her wishes and commands. The child did not even notice the mother's departure, when, after a week, she was left entirely to Miss Marvin's care, although up to this time the mother's lap had been a haven of refuge for self-indulgence in emotionalism.

This rapport which causes the child to form its every action upon the teacher's word and gesture, conduces to the unconscious

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obedience that is an antecedent condition for gaining concentrated attention. As soon as the attention can be held, it is possible to appeal to imitation. The effort was first made to produce slight modifications in movements already familiar and pleasing to the child. Thus the instructor played with the child's doll, caressing it and patting it, rocking it and putting it to sleep, singing and talking to it; the child did the same as far as her limitations in natural play permitted. The instructor then emphasized a few simple movements just a little beyond what the child seemed able to perform. She naturally attempted to follow through unreflective imitation, awakened by interest. Thus was the child slowly taught to cross the leg and kick with one or both feet, while she sat upon a chair rocking her doll. Now and again some action would be risked far beyond the child's powers of muscular co-ordination but attractive to her fancy. Thus with one leg over the other, the doll would be placed on the swinging foot and lifted up and down, "riding piggy-back," in nursery parlance. The child was fond of "riding piggy-back" herself, and although she could not treat the doll in this way, the instructor's action proved a powerful incentive for persistent efforts to attain what was then the impossible.

With the same dependence upon the play instinct, the teacher clapped her hands, shook them up and down, here and there, nodded her head, walked, danced, moved her foot forward and backward. These actions gained the child's interest, compelled its attention and called forth attempts at imitation. By such means the power of co-ordination was developed and voluntary control over the muscles increased.

Next in order came the employment of imitation to arouse the child to articulate speech. Persistent training of the function of speech began December 9th. The child was fortunately fond of music and liked to be rocked and sung to. She would even try to hum the tune herself. Her favorite song,—"Baby, baby, dance my darling baby," was repeated over and over again. As her interest grew, she tried to sing as well as hum, and her attention was directed to the movement of the lips. In ten days (December 19th), she could say "baby" distinctly, and in three days more (December 22d) she could hum the tune, inserting the word "baby" in its proper place. Soon efforts were directed to the imitation of words and elementary sounds.

The circumstances under which she made the first attempt at articulation by the free exercise of her own will are pedagogically

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suggestive. In the fifth week (January 2d), she was watching an older pupil give as an articulation exercise the sound "ah." Without suggestion, she imitated him closely, and gave the sound clearly and forcibly, opening her mouth and even assuming the required pose of body with her hands behind her back. But nothing would induce her to repeat the attempt, although efforts were made to this end for several weeks. She understood apparently what was wanted, but obstinacy or sluggishness of will caused her to resist every stimulus. When she finally yielded, she did it as the result of personal choice and desire, presenting thereby the first clear manifestation she had yet given of a voluntary action determined by complex motives. She was being chided for some mischievous act and was trying to win the instructor over by kisses and caresses. As her efforts seemed unavailing, she stood for a moment as though pondering; her face then brightened into a smile of intelligence; she put her hands behind her back, opened her mouth to the fullest extent, and brought out an "ah" that would have satisfied the most critical articulation teacher. This was the eighth week (January 29th), six weeks after the first word "baby" had been sung. By the end of the tenth week (February 17th), she could give the phonic elements "m," "e," "i," "ah."

The first word that she used with an adumbration of meaning was the word "more." This word was wrung from her by its emotional environment. A distasteful medicine was frequently offered her with the inviting supplication "to take just a little more." She soon learned to point piteously to the bottle, saying "more" with a shake of the head that clearly meant "no."

It is well not to take too much for granted with respect to a child's deficiency. Miss Marvin always insists upon treating defective children as in many respects normal. She sings to them, talks to them in the language of the adult, tells them stories, and is constantly doing what she feels is lost on them. And yet experience justifies her belief that even the weakest mind is surprisingly affected and unexpectedly improved by some factor selected by the child itself from the normal environment in which it is placed.

With the approach of spring, progress became more rapid. She made the very considerable advance of pointing to things she wanted, and toward particular places to which she wished to be taken. Her table manners improved so much that she was allowed her own cup and saucer, and she was able to pass her plate, asking

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insistently and intelligently for "more" of what pleased her palate. The improvement in her personal appearance was marked. Drooling had almost ceased; her mouth and chin were thus kept dry and free from irritation. This was accomplished in part by pointing to her wet dress, appealing to the vanity which she was fortunate enough to possess in the amount due her sex. Her countenance was also losing a little of its blank idiocy of expression.

In the fifth month, April, she learned to throw and roll a ball, to snap her fingers, to hunt for hidden objects, and to show how big she was. She could stand firmly on one foot and kick quite high with the other. A curious limitation in motor capacity was shown in an inability to move any part of the body forward and backward. She could shake her head in negation, but not in affirmation; she was also unable to say "good-bye" with her hands, although apparently more difficult movements were repeatedly performed. She now said "cat," "ball," "doll" and "hello," and could imitate the "meow" of a cat and make the difficult sound of clucking. She also one day surprised the family by passing a spoon in the self-assumed response to a request made by someone at the table.

Her Easter gifts awakened her enthusiasm and appreciation. They were placed on the breakfast table about her plate. As her gaze wandered from one gift to another her eyes grew large and bright until, clapping her hands with excessive joy, she burst into laughter. An attractive red ball and a doll at first had the largest share of her attention, but the feeding of a toy dog by some one at the table soon absorbed all her interest and awakened successful efforts at imitation.

The sixth month of training, May, found her able to walk without fatigue about as far as a normal child. She learned to climb, impelled by curiosity to grasp things placed out of her reach, and stimulated by pleasure in the unwonted muscular exercise. She was developing sufficient strength and manual dexterity to pick up a chair of light weight and carry it about the room. She spent much time before the mirror, watching the movements of her lips in articulation practice. She could imitate so closely the positions of the lips in speech that looking at her one would think she had normal powers of language. Left alone, she kept up a continuous jabbering, quite unintelligible for the most part, but now and then a group of words clearly enunciated would startle the hearer. Interruptions caused her spontaneous language play to cease abruptly. By means of it, however, she

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learned most of the words of her favorite song, "Baby, baby, dance my darling baby."

It would be unfair to Miss Marvin's pedagogical discernment to give the impression that the child's improvement was due solely to the skilful appeal made to its mind. From the first, cold and hot baths followed by alcohol rubbing had been given nightly. Her circulation improved under this treatment and the skin became free from sores. At the same time the shock of the baths seemed to have a beneficial mental effect and improved her sleep. Milk at first had formed the greater part of her diet. So fond was she of this that it was necessary to wean her from the bottle to the enjoyment of solid food. A few weeks showed the good result of changing to a varied and nourishing diet. Her flesh became more solid; her cheeks and body grew thinner, but firmer.

A severe attack of bronchitis with its consequent treatment served to emphasize the necessity of medical treatment for the reduction of the tonsils and the removal of the adenoid growths which almost filled the naso-pharynx. In the seventh month, June, two operations removed these obstructions. On the day following their final removal, the little girl seemed unusually bright and active. In playing with her, the instructor happened to say the word "boy." "Boy" the child repeated clearly and distinctly, without a moment's hesitation. Asked to say it again, she repeated the word many times over and over. If we consider that heretofore not less than two or three months of arduous work had been necessary in order to teach her a new word, one can understand the feeling of the instructor that something like a miracle had been wrought when the child almost with nonchalance successfully essayed a word never before attempted. This marked an epoch in the child's career, a position gained and ever afterward maintained in this heroic struggle to overcome the obstructions of disease. On the same day at dinner, when she was about to place her hand upon the tea-pot, she was warned that it was hot. Instantly she repeated "hot" in an inquiring tone of voice.

It was now possible to form the habit of keeping the mouth closed and of breathing through the nose. The verbal injunction "close your mouth," combined with firm pressure to hold the lips tightly together, enabled her to comprehend what was desired and forced her to breathe through the nose. Effort in this direction was not relaxed until she could sleep quietly at night with the mouth closed. This not only added to her personal attractiveness but also gave to her mind the freedom of action which so often

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manifests itself after the removal of naso-pharyngeal obstruction. The distinguished anatomist and medical specialist, the late Dr. Harrison Allen, never wearied of insisting upon the stimulating effect that the removal of adenoid growths exerted upon the mind. He was able during his lifetime to prove himself a benefactor to many children and to justify his belief in the mental reaction that follows these operations. He has not reported a case in which the mental response was more immediate and pronounced than it was with this little girl.

A month at the seashore during the summer proved a wonderful tonic. Loving the water, she played in the sand at the water's edge, enjoying the waves as they rolled her over and over. This emotional stimulus and the warm sea air may account for her rapid progress during the summer and autumn months. A factor of greater significance, however, was the child's constant association for four months with two normal children of her own age. Imitating them, she grew more natural in her play. Thus they inspired her to envy and emulation as they ran up and down stairs. The noise they made was an auxiliary if not the chief fascination. When she found herself unable to run as they did, she bent her energies to outdo them in the production of noise. In this she succeeded, striking each step many times as she slowly descended, and so determined and persistent were her efforts that it was not many weeks before she was able to go up and down stairs with alternate steps. These normal children also taught her to dance, and, through imitation, her carriage and gait manifested improved co-ordination. Many words were added to her vocabulary, among them "Emma," "Gertrude," " Auntie," "Mary" and "stop."

The four months following this outing showed a great increase in the power of comprehending what was said to her, and also in the ability to follow directions verbally given. At the end of this period she could, when asked, run and fetch the newspaper, although she might be obliged to remove a book before she could lift the paper from the table. She also refused to wear a dress if it was slightly soiled, and instead of fretting during the operation of dressing, she was now anxious to be dressed and would stand comparatively quiet. For this self-denial she rewarded herself by many looks of self-appreciation in the mirror. If thirsty, she could go into the kitchen, take her cup from the nail and ask to have it filled.

Finding herself in the sewing-room, she determined to climb

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upon a couch where the pile of garments was highest. As fast as she was pushed from the couch she stopped only long enough to scold and stamp her foot before making another attempt. Hearing the uproar, her nurse went in and asked what the matter was. The child immediately went to the couch and placed a hand on it, pointing with the other to the floor and then to the person who had pushed her off. Through it all she kept up an incessant jabbering. This first attempt at an elaborate pantomime gave promise of a greater advance in language and thought. In the afternoon of the same day she was looking at a picture book, which was taken from her and held between her nurse's teeth in order to let the child try to pull it away. For a while this only served to tease her, causing her to scold and cry. Suddenly she stopped, looked up into the nurse's face, and said "ah," as though she wanted her to do likewise. The nurse followed the child's suggestion, and as her mouth opened the book naturally fell to the floor. The child instantly picked it up and ran away as fast as she could.

She could now distinguish between the door bell and the dinner bell. No matter how interesting her occupation was, the sound of the dinner bell caused her to drop everything and start for the dining-room, saying "more," the word she now used restrictedly for something to eat. Her appetite was becoming selective, and under the guidance of her improved powers of observation, she refused rice pudding without raisins if she noticed raisins in the portion allotted to others at table. Asked to say her lessons, she would walk over to the wall, place her hands behind her back and repeat all the words she knew. When compelled to stand in a corner as a punishment, she always preferred to choose her own corner. Her persistence in voluntary effort was shown in her first attempt to pick up a pin. Before accomplishing it she worked fifteen minutes without a sign of anger or discouragement. Practice soon gave her facility in this difficult bit of manual coordination. During the fall months she had learned to say "Peek-a-boo," "towel," "ribbon," "ring," "box," "stew," "Eddy," and "Mattie," and while shaking hands she could say "How do you do?"

She spent Christmas at home. Although she had failed to remember her former life, on her return to Miss Marvin's home, the joy with which she greeted each member of the household bore evidence to the strong impression that the experiences of the preceding year had made upon her memory. The beginning of the second year was devoted more particularly to the development

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of her capacity for persistent concentration of attention and effort. Her progress was noticeably accelerated and at times a hope was expressed that the child might ultimately attain to normal mentality. Unhappily at the end of the third month of the second year misguided maternal instinct, deeming itself capable of undertaking the further development of this child's mental life, summoned her home to become the victim of a solicitude which sought to make enervating affection fulfil the office of knowledge and discernment. The task of education appears very simple and even easy to those who see the results obtained by the natural talent and acquired skill of the successful teacher.

What had been done in fifteen months for this still defective child? The repulsive countenance had been transformed into almost a thing of beauty; curly hair covered a naturally well-shaped head, the mouth was closed, the cheek firm and healthful in appearance, the bridge of the nose was beginning to be noticeable. The dull lifelessness of the eyes and general vacancy of expression alone betrayed the mental deficiency. The irritable infant lying helpless in its mother's arms was now an active child, revealing the potentialities of a progressive mental existence. The child, absorbed in its own bodily distress, and seeking only self-gratification, had become a favorite of the household through her affectionate and sympathetic disposition. The infant who could barely crawl now walked upstairs with alternate steps and with both arms heavily laden. The speechless child now used connected words, and could say "More tea, "More potatoes," "I love you," "I love my baby," "I love my mamma," all distinctly articulated. The child, who possessed so little intelligence that her mother's highest hope had been to see her able to point to what she wanted, could now select with discrimination the clothing she wished to wear, and could execute with precision the details of simple commands verbally given. In the last days she was worrying a visitor for a cornet he had brought with him. The mother said to the child: "Perhaps if you will give the doctor your doll, he will let you have the cornet,"—a verbal suggestion which the child instantly carried out in action. Originally lacking in persistence, her capacity for continued effort was shown when she placed, at the first attempt, one hundred of the smallest pegs used in kindergarten work into the holes of the pegging board. The sport of every passing whim and emotion had now developed a will power capable of resisting its own impulses and of yielding obedience, and had begun to manifest the foreshadowings of a moral sense and a self-respecting personality.

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PUBLIC DAY SCHOOLS FOR BACKWARD CHILDREN.

By Clara Harrison Town,

Resident Psychologist at Friends' Asylum for the Insane, Frankford.

At the termination of two years' experience in teaching a class of backward children in one of the Philadelphia Special Schools, I find myself convinced that the results of the work might be greatly increased by the adoption of three new measures. The attempt to train backward and defective children in day schools is a very recent movement in this country, and only gradually, through repeated efforts to solve the many problems involved, will effective methods of training these children be developed. In Philadelphia, as in many other cities, teachers and the school authorities are beginning to appreciate the necessity of making some effort to solve these problems, but they find the conditions so complicated that, lacking the necessary training, they feel powerless to cope with them. At the present time the problem is really in the stage of initial consideration. One cannot expect an adequate system to be organized for some years to come. With the purpose of calling attention to three conditions which seriously interfere with the effectiveness of the work now being done in the Philadelphia schools, I present this paper.

The first condition of which I wish to speak is the close relation existing between the classes for backward children and the classes for truants and incorrigibles. In Philadelphia the backward classes are always placed in the special schools, which are primarily intended for the training of truants and disciplinary cases. In fact, in many of these schools the backward children are placed in the same classes with the disciplinary cases. They mingle freely with the incorrigible boys at recess and at the noon hour, and are thus subjected to contaminating influences. The backward child is one who has not had force enough to hold his own under ordinary school conditions. How much worse is it, then, to subject him to the influence of an environment such as this!

Moreover, the methods of discipline in a special school are necessarily severe and strictly enforced, and it is not possible to exempt one class from the regular requirements without creating

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the feeling that injustice is being done, and thus jeopardizing the general discipline of the school.

One example will serve to illustrate how this condition of affairs hampers the teacher in her training of the backward child. The retardation of one of my boys was due chiefly, if not entirely, to a very pronounced speech defect,—so pronounced that most of his talk was unintelligible. I was giving him individual training in articulation, for which I could spare but a brief period each day, and when one day's lesson was omitted the effect was evident. This boy soon became friendly with some truants, and with them absented himself from school. The following day the boys were all punished alike, for they had all committed the same offense. The result was that my boy's indignant mother kept him from school for an entire week,—in fact until I had paid a visit to his home,—and much valuable time was lost. This boy was very suggestible; he was ready to follow the lead of other boys into any kind of mischief; and he was constantly among boys who did not fail to urge him on. Had he associated with ordinarily well-behaved boys, no such trouble would have arisen.

It is true that many boys who are mentally retarded are at the same time fit subjects for the disciplinary classes. The unruliness is in many instances the direct result of keeping the child in a class of normal boys. His mind, being utterly unable to grasp the class work, is left idle and wanders off to the most enticing mischief at hand. Placed in a class where he is kept constantly employed with work adapted to his abilities, the mischievous tendencies of such a boy soon disappear.

The first and most crying need, then, of these backward classes appears to be entire separation from the disciplinary schools. This could most readily be accomplished by establishing such classes in the regular schools. In the majority of graded schools there are sufficient backward children to form a class, which, for effective work, should not number more than twelve or fifteen children. In schools where the number of backward children is not so large, one class might suffice to accommodate the children from two neighboring schools. Unfortunately this change would mean, under the present régime, a deprivation of the sloyd training which, when guided by an efficient teacher, is well adapted to the needs of a backward child. This loss, however, could be largely made up by additional handwork of other kinds, such as basketry, raffia work, and hammock making. The loss of the sloyd period would, I am confident, be far outweighed by the gain from the improved environmental conditions.

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The second point to which I wish to call attention is the badly nourished and underfed condition of these boys, and the impossibility of training any children, even exceptionally endowed ones, under such conditions.

An experienced social worker tells me it is a difficult and almost impossible task to find out the nature of a child's diet from a visit to his home. Questions are answered evasively, and the reported bill of fare is usually the recollection of a holiday feast, not an everyday meal.

The special schools furnish an exceptional opportunity for discovering the nature of a child's diet. The session is from nine until two, with a noon recess for lunch, which the boys are supposed to bring with them. Many of my boys brought none at all. Others brought such a lunch that none at all might have been less harmful. Rank coffee proved to be the chief staple. This they brought in little bottles and placed around the stove to heat. Upon questioning them, I found that the breakfast of many consisted of a cup of coffee and some bread. Boys but feebly endowed in the first place, and fed on such food, we expect to sit quietly through a long school session and put forth something in the way of mental effort! It is most unreasonable and even cruel to expect it.

Such boys are listless and inert, and, though often most willing, have not the vital energy to accomplish anything. Their written work bears striking testimony to this fact. The first problem in an arithmetic paper will be neatly and correctly solved, while the last problems will be so illegible as to render examination impossible. In physical exercise the same condition is manifested. The first movements will be executed with some degree of force and precision, but before the end of the series the muscles grow lax and the movements lifeless.

Unquestionably, many of our pedagogical failures may be traced directly to the feeble physical condition of the boys.

During the second winter, I prohibited coffee and substituted hot soup. This was gladly welcomed by the boys, and doubtless did some good, though it was far from supplying the three good meals a day, to which every growing boy is entitled.

Mr. Luther Burbank is of the opinion that he can apply to the subject of child training the conclusions at which he has arrived through the cultivation of plants. He believes that three things are absolutely essential for the training of plant life and human life as well,—sunshine, good air, and nourishing food.

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He would not attempt to cultivate a plant without these three aids; and why, he asks, should more care be lavished on an orchid than on a child? He further expresses himself strongly to the effect that not only the children of the well-to-do should have these three necessities of normal growth,—sunshine, good air, and nourishing food,—but that every child of the nation, the poor as well as the rich, is entitled to its share, and failure to furnish it will affect not only the child, but the welfare of the nation itself. "To the extent that any portion of the people is physically unfit, to that extent the nation is weakened. To the extent that we leave the children of the poor to themselves, and their evil surroundings, to that extent we breed peril for ourselves. The only way to obviate this is absolutely to cut loose from all precedent and begin systematic state and national aid, not next year, or a decade from now, but to-day."

We are still a young country, and fortunately economic conditions have not yet forced us to face these facts as the older nations have been compelled to do. Our compulsory education laws, however, are already informing the public of the existence of the evil. If action is taken at once to improve these conditions, the widespread degeneracy now prevailing in England as the result of underfeeding need never exist in this country. The people of the working class in England are noticeably inferior to those of the wealthier class both in height and general physique. Mr. Rowntree states that a comparative study made in the town of York of the height and weight of boys of thirteen years of age belonging to the well-to-do working classes and those of the same age belonging to the poorer working classes, revealed a difference in average height of three and one-half inches, and in average weight of eleven pounds. This physical degeneracy has reached such a point that in one year 54,000 of 92,000 applicants failed to meet the physical requirements for army service.

This alarming condition of affairs has led to several governmental investigations into the probable cause of such physical degeneracy. The reports of four of these investigations agree that underfeeding is the chief cause of both physical and mental degeneration among the poorer classes. Dr. Alfred Eichholz has expressed the opinion that insufficient food is at the bottom of all the evils of child degeneracy, and that if the children were properly fed the evil would rapidly disappear. He reports that sixteen per cent of the children of the London elementary schools are underfed.

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Dr. Collie, a London medical inspector of schools, also believes that underfeeding is a direct cause of mental defectiveness. He calls such children *functionally defective* and attributes their condition to a starved brain. He thinks that many children who are judged to be dull or slow are really suffering from this functional defectiveness. A number of my boys, I feel sure, belonged to this class of defectives. In one of them I could discover no special defect of any kind to account for his apparent inability to progress. I therefore took him to the clinic in child psychology at the University of Pennsylvania for examination by Professor Witmer. He considered the case a physical one, and sent the boy to Dr. Burr, who attributed the condition to improper feeding, and prescribed a special diet. Fortunately the mother of this boy was able to follow the physician's directions, and there was a marked improvement in a very short period of time. This was a case of malnutrition and mental enfeeblement due to improper feeding, and hence more easily overcome than cases due to underfeeding, where poverty often raises an insurmountable barrier.

The English authorities agree in the belief that the condition of such children is rapidly improved by nourishing food. During a Parliamentary debate on free meals, March, 1905, it was stated that the children in the day industrial schools, where three meals a day are furnished, grow bright and intelligent and develop rapidly. In our own country the experiment has not been tried in day schools, but the results of the experiment in the Chicago Hospital School are equally convincing, and the experiment made on the prisoners at the New York State Reformatory at Elmira seems to prove beyond a doubt the dependence of both intellectual and moral development on physical health.

Mr. Z. R. Brockway, then superintendent of the Elmira Reformatory, established in 1886 "an experimental class in physical culture." Twelve criminals, none of whom had made any progress in school work for periods varying from one to two years and all of whom seemed quite incapable of it, were made the subjects of this experiment. They had all committed grave crimes and all presented marked stigmata of degeneracy. A special dietary was substituted for the prison fare, and massage, physical training, and baths were given regularly, while the school work was increased in amount and changed in character so as to call forth greater mental effort. At the end of five months of this régime, says the report, "the aimless, shuffling gait gave way to a carriage inspired by elastic muscles and supple joints. The faces

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parted with the dull and stolid look they had in the beginning, assuming a brighter and more intelligent expression." A decided mental awakening was evidenced by an increased interest in study, and an earnest effort to progress, which resulted in an average mark for the five months of 74.16—a great increase over the 45.25, the average for the previous five months.

When such wonderful results as these have actually been attained with this apparently hopeless set of matured degenerates, what could not be accomplished with children taken before the slothful or evil tendencies have settled into fixed habits?

Recognizing the relation between underfeeding and physical deterioration, and between malnutrition and mental and moral degeneracy, it is but a step to the conclusion that many of our underfed children will find their way to the special and backward classes.

The teachers in the special schools recognize the deplorable physical condition of many of the children, and often try to add a little to their noon-day meal. Such efforts, however, are entirely inadequate and pecuniarily wasteful. A concerted effort to supply for these classes a good, hot dinner every day would be a much more intelligent and satisfactory method of meeting the situation. It would result, undoubtedly, in a higher grade of school work, and in the development of young men better able physically, mentally and morally to take their places as useful citizens.

Many persons oppose the feeding of hungry children, feeling that by so doing we are perpetrating a wrong against the parents. They believe that by relieving the poor of the absolute necessity of feeding their children, we are depriving them of the greatest of all spurs to industry. From a humane standpoint, it seems hardly fair that for such a negative good to the present generation we should blight physically, mentally and morally the future generation. From an economic standpoint, all experience points to the fact that results attending efforts directed toward the training of children for efficient manhood are infinitely greater than the results obtained by attempts at adult reformation.

While the parents are left unassisted to provide for their hungry children, these same children will necessarily develop into another generation of incapable parents, and a similar tragedy will be enacted in the lives of their children and their children's children, until the evil reaches such vast proportions that it becomes a menace to the nation.

On the other hand, if the present generation of children is,

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by proper food and training, brought to a healthy, normal manhood, it will undoubtedly provide for its own children. The evil will gradually dwindle away, and in each succeeding generation the community will be called upon to provide for a smaller number of little ones.

With our backward children placed in a suitable environment and properly fed, the more subtle question of awakening their intelligence could be approached with far greater chance of success. The mode of attacking this problem is the third point on which I wish to speak. The only practical way of approaching it is by a thorough examination of each individual child. In even a small class of backward children, the most varied forms of mental deviation reveal themselves, and the peculiar defect of each child must be discovered before any intelligent attempt can be made to educate it. In many cases defective eyesight and hearing are among the chief causes of mental retardation; in others, the children are necessarily handicapped by the presence of adenoids; while in still others, stuttering or stammering so pronounced as to make the speech unintelligible is the evident cause of the backwardness. More profound mental defects of the will or attention are also frequent.

The average teacher has neither the training nor the time to make such a thorough examination of her pupils. The average physician, experience has proved, is no better able to cope with the problem. The trained psychologist is, at the present day, the one person properly qualified to make such a diagnosis. He can, in many cases, point out the only avenue through which education would prove effective. He can often determine the defect which is the cause of the difficulty, while the educator can see only the difficulty. He can further suggest certain lines of training designed to remove special defects, and by following these suggestions results may be obtained in a short time which would never be reached without such initial expert diagnosis and advice.

In my class were four cases of speech defect; in two of these I look upon the defect as the main cause of a marked mental retardation. There were two cases in which the chief defect was a volitional one,—possibly a form of abulia. These boys were willing and able to do anything habitual, anything that needed no mental effort, but any attempt to force them on to an untried field of mental action caused sullen opposition. With two others the mentality was quite normal with the exception of an excessive

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slowness in every sort of reaction, which made it impossible for them to do any but individual work. With several the trouble seemed to be centered in an inability to concentrate their minds on anything for more than a few moments; they were typical examples of aprosexia.

Each one of these defects must be reached by different methods, and if the root of the evil is discovered early, the progress made will be incalculably greater.

How much can be done for certain forms of speech defect by articulation training, was illustrated by the case of infantile stammer, reported in the March number of *The Psychological Clinic*. Such cases emphasize the importance of basing the instruction of backward children on a thorough psychological examination of each individual child. The education of such children is a difficult pedagogical problem, and its only chance of solution lies in the discovery and adoption of the particular method especially adapted to the needs of each individual child.

When our school environment is improved, our children well fed, and the instruction given to each child is based upon a thorough psychological examination of that child, we will find our measure of success growing larger, and our schools for defective children more nearly approaching that ideal towards which we are striving.

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REVIEWS AND CRITICISM.

Child Labor. The Annals of the American Academy of Political and Social Science, Vol. XXIX, No. 1, January, 1907.

This number of the "Annals" contains a collection of nineteen articles treating the subject of child labor from quite diverse points of view. The complete series presents a clear and comprehensive picture of the actual situation as it appears to men and women whose lives bring them into vital contact with the conditions which they discuss. Six of the articles describe the present status of child labor in the South, the Middle West, and the coal region. The physical effect of premature labor from the standpoint of the physician is discussed by Dr. Albert F. Freiberg; the various means of dealing with the question by legislation, and the obstacles encountered in enforcing the labor laws, are discussed by Homer Folks, Senator Beveridge, and others; the relation of the child labor laws to the public schools is treated by Samuel McCune Lindsay, Nathan C. Schaeffer and Charles W. Dabney.

One is strongly impressed, in reading the volume, with the absolute necessity for more positive statistical information in regard to the actual child labor conditions in the several states, and the effect of premature labor on the mental, moral, and physical being of the child. At present, the advocates of reform have little to offer but general impressions and opinions; and no matter how true these are felt to be by those of us who are familiar with the conditions, they will not be accepted as facts by the industrial communities to whom child labor means wealth. This lack of positive data was keenly felt by the Ohio State Child Labor Committee, when asked by a group of manufacturers to substantiate their claim that physical deterioration results when children from twelve to sixteen years of age are kept at work ten hours daily. They were unable to furnish the desired proof, and therefore unable to make their plea for reform a strong one.

Dr. Freiberg, in writing of "Some of the ultimate physical effects of premature toil," describes some pathological conditions resulting from child labor of the less strenuous type. Continued standing, or sitting, even when unaccompanied by arduous toil, he considers fatiguing in the extreme, and to the growing child very detrimental to normal development. Continued standing frequently results, either during childhood or later in adult life, in the painful disease known as "flat foot," which often entirely incapacitates the individual for any labor which requires standing, and thus deprives him of his trade and with it his best means of livelihood. In order to relieve the fatigue of continuous sitting the child assumes unnatural positions, often resulting in a lateral curvature of the spine, which leads to diminished chest capacity, to crowding and

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displacement of the organs, and to an increased tendency towards pulmonary consumption. Such information, however, will not be accepted by the enemies of child labor reform, unless embodied in statistical reports, and this can only be accomplished, says Dr. Freiberg, as the result of a series of examinations made by experts on large numbers of working children at stated periods in their development, and a similar series of examinations made on an equal number of non-employed children. Dr. Freiberg strongly urges that such an investigation be undertaken, not by a private society, for which it would be too great a task, but by the government. Senator Beveridge mentions, among the many objections which are made to national legislation on the subject, the opinion that "the evils of child labor are overdrawn" and that "it is a good thing for a child to have to work." Even the convincing eloquence of Senator Beveridge is insufficient to overcome these objections without substantial proof that his statements are correct. Professor Lindsay also calls attention to the poverty of data supplied by the Educational Department, stating that the public cannot be expected to raise money enough to educate the vast number of children crowded into the schools by the enforcement of labor and compulsory education laws, unless it is accurately informed of the actual conditions and needs.

The consensus of opinion seems to be that the remedy for the evil of child labor will be found in national legislation. Dr. Felix Adler shows that the continuance of premature child labor is directly opposed to the modern attitude toward the child. The child is looked upon as "a promise of something that is to be, as the possibility of something finer, something better, something greater on the earth than has yet been." While holding this ideal, our nation is sacrificing hundreds of thousands of little ones to the greed for gold; for the child who is compelled to work under fourteen is physically stunted, mentally crippled, and through his nervous exhaustion and the bitterness of spirit engendered by his condition, he is morally unfitted for good citizenship. Thus the existence of child labor prevents the evolution of that type of manhood which is the hope of the American people. Though Dr. Adler is a strong advocate of state autonomy, he realizes that the commercial and industrial interests in many of the states are so strong that effective state legislation against child labor is impossible. He therefore advocates national action, believing that "when a part of the nation acts in such a way that the mischief of its action extends beyond its own borders, then the whole nation must intervene. When a part acts in such a way that the moral turpitude of its action is an offense to the consciousness of the whole people, then the whole people must intervene and put an end to that offense and that mischief, as in the case of slavery."

The attitude of the educator towards child labor legislation is presented in the papers of Superintendent Schaeffer, Professor Lindsay, and President Dabney. Dr. Schaeffer emphasizes the moral value of

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training the child in habits of industry, and fostering in him a love of work for its own sake, before the burden of self-support is thrust upon him. He welcomes the release from labor which leaves the child a little longer in the school to profit by such training. Professor Lindsay recognizes that the result of the enforcement of child labor laws has at once increased the opportunities and the duties of the educator. It makes it incumbent upon the community to supply schools enough for all the children, and, moreover, to supply training in trades, which is at least equivalent to that which would be secured by the children in any factory or workshop. It makes it necessary to supply school facilities, and when poverty demands it, food and clothing for the one in every six children from ten to sixteen years of age, who is at present a wage-earner. To meet this demand a great increase in revenue will be necessary, and this will be forthcoming when the administrative department of the schools is able to present statistics which will demonstrate clearly to the public the needs of the department and the cost of supplying them. President Dabney is of the opinion that the schools themselves may do much to lessen child labor by improving the curriculum. The key-note of his article is, that children want to work because "there is nothing doing in the schools." "When we provide," says President Dabney, "for the full life of the child, we will not have to make so many laws for compulsory education or against child labor."

The volume also contains reports from the State and Local Child-Labor Committees, and the Consumers' League; and, in a new "department of social work," an account of the recent industrial exhibit in Philadelphia. It is accompanied by a supplement containing a compilation and analysis of the laws of the several states on child labor, prepared by the National Consumers' League.

The Physical and Mental Examination of Public School Pupils in Chicago. Dr. D. P. MacMillan, Director of the Department of Child Study and Pedagogic Investigation of the Chicago School Board. Charities and The Commons, Vol. XVII, No. 12, December 22, 1906.

The department of child study and pedagogic investigation of the Chicago board of education was established September 6, 1899, as a result of the efforts of Dr. Wallace Scott Christopher. The objects and functions of the department as set down at that time were: (1) Research work comprising (*a*) collecting anthropometric and psychophysical data for the purpose of establishing norms and for determining such relationships as may be of service in pedagogy, and (*b*) applying accurate scientific methods to specific pedagogical problems, practical methods of teaching, and the determination of the pedagogical value of various studies; (2) The examination of individual pupils with a view to advising as to their pedagogical management; (3) Instruction to teachers in child study and psychology.

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These two lines of work, the scientific and the practical, have been developed side by side. The first undertaking was an attempt to secure norms of physical growth. Records of height, standing and sitting, weight, endurance, strength, lung capacity, voluntary motor control, visual and auditory acuity, were taken of large numbers of children of each age between six and eighteen years, and the rate of annual and semi-annual increase noted. The next task attempted was a correlation of these results with mental efficiency. The difficulties encountered showed that it would first be necessary to secure satisfactory mental norms. The school standing by grades was found to be an inaccurate index of mentality, as was also the teacher's estimate of the child's mental efficiency. The department finally attempted to obtain by original investigation more accurate determination of the mental status at different stages of development. It secured data "on a few reliable and representative mental functions, such as perception, memory, association, attention, imagination, and judgment, on relatively small groups of children. These have proven perfectly reliable for its practical purposes and problems, and are being gradually extended and verified. . . . With a scientifically determined and properly adjusted code of physical and mental norms secured from thousands of children, experience has shown that the examiner can safely measure by comparative position any child who is under observation, and outline the probabilities of his attaining the growth and power which the strands of his inheritance make possible."

The attempt has never before been made to establish such mental norms. Their publication, together with a statement of the methods employed in securing them, would be of great interest to all engaged in active work with children and would constitute an important contribution to genetic psychology.

Among the practical problems which Dr. MacMillan has made the subject of investigation are, the size of desks adapted for use in the various grades; the determination of the periods in the school day when the pupils are best able to do exhausting work; the amount of visual constructive imagination possessed by pupils of the higher grades; the spelling ability of school children, and the best methods of developing it; the comparative value of oral and silent reading in children in the early grades as a means of gaining information; and the general problem of writing.

The department also examines great numbers of children who are ranked as backward and subnormal, or who have special sensory defects, recommending medical or pedagogical treatment to the parents or teachers. Every truant and incorrigible child at the parental school is given a psycho-physical examination shortly after entrance, and another before he is parolled. The work has also been extended to include many of the children of the juvenile court, numbers of whom are sent to the department for a statement of their mental and physical status.

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NEWS AND COMMENT.

The report of the school committee of Brookline, Mass., for the year ending January 31, 1907, contains some interesting data obtained from the Pierce School, as the result of a carefully conducted examination of eyesight, hearing, and condition of the nose and throat.

The eyes of 420 boys and girls, ranging in age from eight to sixteen years, and taken from all grades above the primary, were tested with the ordinary vision card and afterwards examined by the electric retinoscope in a darkened room. Each child was also questioned as to the presence of headache or pain in the eyes.

The object was to determine the number of children with defective vision, and furthermore the number of these who could be helped by treatment. Incidentally data were collected with reference to the relation between eyesight and scholarship.

Of the 420 children examined, 167, or 40 per cent, were found to have perfect vision; 155, or 37 per cent, slightly imperfect vision, while 98, or 23 per cent, had grave defects of refraction which required further examination and treatment.

The investigation demonstrated that the visual test cards are not a sufficiently accurate test to use with school children. Many children, who are suffering from so severe a defect as to be subjected to continuous eye strain, reveal no abnormality with this test. Although this is an important finding and a result that was to have been expected, it should not lead a school system that must depend upon the test card alone to detect serious defects, owing to limitations of time and means, to abandon the distance test as valueless. It will discover a sufficiently large number of children suffering from defective eyesight to justify its employment.

The results also show that the proportion of children suffering from defective vision increases in the higher grades. In the lowest grade one-half of the children had perfect vision. In the highest grade the majority of the children had slightly defective eyesight, and the number suffering from very defective vision equaled the number who showed no defects.

An attempt was made to correlate the refractive errors thus discovered with the school standing of the children. The teachers graded the children in scholarship as excellent, good, fair, unsatisfactory, and poor. Eighty-six of the 420 children were graded *excellent,* and of these 43, or 50 per cent, were numbered among the 40 per cent enjoying perfect vision; 36 per cent had slightly defective vision; while only 12, or 14 per cent, were drawn from the class with very defective sight. One hundred and thirty-seven children were ranked as *good.* Of these nearly 67 per cent had perfect or slightly imperfect vision, while the

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eyesight of the remaining number was very defective. Eighty children were marked *fair*. Of these 52, or 65 per cent, had normal vision, and in 28, or 35 per cent, it was very deficient. In the two lower grades, on the contrary, the children with defective eyesight were in the majority. Among 38 unsatisfactory children only 4, or 10½ per cent, had normal vision, while 15, or 39 per cent, were drawn from the group with poorest vision. In the lowest grade of scholarship the number of pupils having defective eyesight was double the number having perfect vision.

The aural, nasal and pharyngeal examinations were made with the double object of gathering data and determining, if possible, the best methods for the aural and nasal examination of school children. Two hundred and eighty-nine children were examined, all of them selected from the upper grade on account of the desirability of obtaining intelligent answers. The method employed was as follows: a large room was used, the floor being marked in foot spaces up to 25 feet; the child was placed in a revolving chair at the first space. An examination was first made of the drum membranes, the nose and throat. The hearing was then tested by the whispered voice which could be heard by the normal ear at an average distance of 25 feet, and by the spoken voice which could be heard normally at a distance of 35 feet. The child was placed with the ear to be tested toward the examiner, the opposite ear being tightly closed with the forefinger. The distance at which the child could repeat words and short sentences was recorded and compared with the normal distances for hearing the same words. The presence of adenoids was determined by the hearing tests, the position of the drum membranes, and the general facial expression. The digital examination and the general use of the mirror were impracticable. Of the 289 children examined, 68, or 23 per cent, had two-thirds or less than two-thirds of normal hearing; 10 children had hypertrophied turbinates; 35 had septal spurs; 8 deviation of the septem; 89, or 30 per cent, gave evidence of adenoids; 63, or 21 per cent, had hypertrophied tonsils; 15 showed the result of chronic suppuration of the middle ear; 3 had discharge from the ear.

In correlating the condition of the hearing with the school standing, it was found that the percentages of children suffering from diminished hearing in the five scholarship grades were as follows: *excellent,* 17 per cent; *good,* 20 per cent; *fair,* 30 per cent; *unsatisfactory,* 52 per cent, and *poor,* 42 per cent. Thus the percentage of children showing defects of vision and of hearing increases as the grade of scholarship decreases.

The Starr Centre Association of Philadelphia sold during the year 1905 43,287 penny lunches. These lunches were sold during recess time to the pupils of the House of Industry, the Special School No. 6, at Front and Lombard Streets, the James Forten Elementary Manual Training School, and the Starr Centre Kindergarten.

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The undertaking began in 1894 under the direction of Miss Johnson, of the Drexel Institute, and since that time has been continued uninterruptedly by the Starr Centre Association. These lunches are served on a table covered with white linen, and a variety of carefully selected food is served by an official of the association. Among the things which a penny will buy are a cinnamon bun, a glass of milk, a banana, a cup of cocoa, a cup of rice pudding, four graham wafers, a cup of soup, and variety of cakes and crackers. The proceeds derived from the sale of penny lunches are expended in material. The expense of service is met by voluntary contributions to the Starr Centre Association.

Many children come to school without breakfasts, or with nothing more than tea or coffee and bread. This is the diet of a large number of children that are found to be backward in school progress wherever the conditions of backwardness are made the subject of even superficial examination. Many municipalities are already making a serious effort to provide the backward and truant children with at least one good meal a day. A large group of mentally and morally retarded children could be brought to the normal standing without resorting to other treatment than proper feeding. The work of the Starr Centre Association of Philadelphia is pointing the way that the city authorities must take if these children are to develop into normal men and women.

As an outgrowth of the pioneer work of Dr. Maximilian Groszmann in his school on Watchung Mountain, near Painfield, N. J., an association has been incorporated under the laws of the State of New Jersey, to advance the study and treatment of mentally defective children.

Dr. Groszmann's effort has been to discover in young children just on the border line between the normal and defective, the tendencies toward deviation from the normal, and by medical and educational treatment, especially adapted to the needs of the individual child, to overcome these tendencies as far as possible, and to develop fully all the latent capabilities of the child.

The aim of the new organization is to make possible a great extension of this work. Its purposes are stated in its charter as follows: To establish and conduct schools and institutions for the treatment, care, and education of nervous and atypical children; to provide for the delivery and holding of lectures, exhibitions, public meetings, classes and conferences calculated directly or indirectly to advance the cause of education; to establish and maintain laboratories for the scientific study of this problem; to publish books, pamphlets, or periodicals embodying the results of investigation; to establish and maintain a library; to establish courses of instruction for teachers, etc.; and to so administer whatever funds may be collected as to promote to the best advantage whichever of the above movements may be inaugurated.

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The fourth national conference on the education of backward, truant, and delinquent children will be held at Minneapolis, June 10th to 12th. The sessions of the first two days of the conference will be held at the assembly hall in the city and county building, Minneapolis, and the session on June 12th will be held at the State Training School, Red Wing.

Miss Clara Harrison Town, resident psychologist at the Friends' Asylum for the Insane, Frankford, but at present on leave of absence and acting as an assistant in the psychological clinic connected with the laboratory of psychology in the University of Pennsylvania, was recently appointed by the Philadelphia Court of Quarter Sessions to serve on a commission in lunacy.

The annual conference of the British Child Study Association was held in Birmingham on Thursday, Friday and Saturday, May 2, 3 and 4, 1907.

An international conference of teachers of the deaf is to be held at Edinburgh on July 30th and following days, under the auspices of the National Association of Teachers of the Deaf of Great Britain and Ireland.

It is reported that the director of the Harvard Psychological Laboratory is about to make the laboratory useful in the direction of an examination and classification of the backward children of Cambridge. The advertisement of the "Harvard Psychological Studies," found on one of the cover pages of this number of THE PSYCHOLOGICAL CLINIC, is also in evidence to show that Professor Münsterberg has recently seen a great light. THE PSYCHOLOGICAL CLINIC does not flatter itself that it has been the sole cause of what must appear to many a marked change in Professor Münsterberg's attitude on the question of the relation of psychology to education. Since his attack upon G. Stanley Hall at the Schoolmasters' Club of Boston more than ten years ago, and the publication of his views on "The Danger from Experimental Psychology," which inspired the comment on page 26 of the first number of THE PSYCHOLOGICAL CLINIC, Professor Münsterberg has doubtless found the science of psychology moving steadily away from the position which he then took. He has not yet, however, seized an opportunity to retract the views expressed upon those occasions, and therefore it is not surprising to find these opinions often quoted by teachers and school authorities in support of a policy of inactivity and ignorance. It is helpful to the cause which THE PSYCHOLOGICAL CLINIC is supporting, to learn from an authoritative source—the advertisement of Houghton, Mifflin & Co.—that the Harvard laboratory "is devoted to physiological psychology, educational psychology and comparative psychology."

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The Psychological Clinic

VOL. I. No. 4. JUNE 15, 1907.

CLINICAL STUDIES OF RETARDED CHILDREN.

BY GEORGE W. TWITMYER,
Superintendent of Schools, Wilmington, Del.

Public education, in its broadest sense, may be regarded as a people's deliberate effort to secure for their children in physical, intellectual and moral development the best that the race has achieved. The specific achievements of the race, upon which education as a process draws for direction and guidance, are found in the history of civilization, in sanitary engineering, psychology, pedagogy and hygiene. Pedagogy, in its modern aspect, is the theory and art of education and is the scientific and humane application of the world's best thought and practice to the development of all children, whatever their condition by nature or environment may be. Every child has a right to an education,—that is, to the development of its powers to their fullest possibilities. This does not mean that all children should have the same education, but it does mean that each child should be educated in accordance with its capacities and possibilities, in short in acccordance with its individuality.

The school is maintained and supported for the children; its only excuse for being is that it shall give the individual child a start in the right direction, toward right living, right thinking and right doing. Whatever conduces to the accomplishment of this purpose is educational, and is worthy of careful consideration and profound study.

The child in all its relation to the school is the center of educational concern; school houses, courses of study, text books, all the instrumentalities at the command of the teacher and the management, are of secondary importance. The school training of children means the care of individuals, not of the community; it means a careful study of each child in all its moods and tenses, of its individuality and expressive acts, of its temperament, environment and physical condition, so as to adapt the educative

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process and surroundings to its personal needs. There are in all schools children who, through accident, sickness, disease, environment or heredity, have certain peculiarities of mind or body, and must therefore be given individual care and attention if they are not to fall behind or fail altogether in their school work.

For several years the failure of many pupils to be promoted regularly from grade to grade—retardation—has been a subject for the serious consideration of all connected with the management of the Wilmington schools. With the hope of ascertaining definitely the causes of retardation, two lines of inquiry were instituted; one bearing on the course of study and the quality of teaching in the several grades, the other bearing directly upon the individual child.

In comparing the course of study in our schools with the courses followed in a number of other progressive cities, the amount of work to be accomplished by our children was found to be about the same as that required elsewhere and in no sense excessive. It was also discovered that a normal child of average ability, by ordinary work and with not too many distracting engagements out of school hours, could easily master in the allotted time the required course in the several grades. The teaching, too, from year to year is becoming very sympathetic, more rational, more painstaking, more individual, and therefore enables a larger number to complete the grades regularly.

Every school has some unfortunate children who cannot keep pace with their more fortunate neighbors; they are known as "backward children, dullards or defectives." These children are often burdened with some physical defect, or mortgaged by some inherited abnormality which, if properly diagnosed and treated, may be relieved. Children are dullards by the law of cause and effect. The dulness or retardation of every child is the effect of some cause, sometimes trivial, sometimes serious, but generally discoverable and remediable. It is the duty, nay, the high privilege of the teacher to discover the retardation, diagnose its causes, where possible, and suggest to parents the proper treatment.

During the last five years, with the assistance of principals and grade teachers, I have made a careful study of non-promoted pupils in all grades. The causes of mental retardation as discovered by our teachers, may be roughly stated as follows, viz: irregularity in attendance and truancy; bad or indifferent domestic conditions and low ideals of life and conduct; want of parental care and discipline; vicious associates; malnutrition and fatigue; defective eye-sight, defective hearing, and such physical

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defects as catarrh, enlarged tonsils and adenoids; tobacco and alcoholic poisoning; the sequellæ of scarlet fever, diphtheria, measles, whooping cough and typhoid fever; chorea and nervousness manifested in mental irritability, depression, emotional excitement, morbid fears, lack of self-control, persistent ideas, weakness of memory and concentration, exaggerated mobility, tremors and twitching movements of groups of muscles; stammering, stuttering, and other developmental defects.

An accurate determination was made of the number and age of all the children in each year of the twelve-years' course of study. The results for a single year have been selected for presentation in the following table:

TABLE I.

THE NUMBER OF CHILDREN OF EACH AGE IN EACH YEAR OF SCHOOL LIFE FROM THE FIRST TO THE TWELFTH YEAR.

AGES	PRIMARY					GRAMMAR			HIGH SCHOOL				TOTALS
	1st Year	2d Year	3d Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	11th Year	12th Year	
6	558	24	....	....	....	....	....	....	....	....	....	....	582
7	559	305	7	2	....	....	....	....	....	....	....	....	873
8	243	471	259	36	1	....	....	....	....	....	....	....	1,010
9	72	255	418	260	23	....	....	....	....	....	....	....	1,028
10	24	97	257	409	196	15	1	....	....	....	....	....	999
11	17	44	121	286	323	159	9	....	....	....	....	....	959
12	9	20	67	137	267	346	114	26	1	....	....	....	987
13	4	11	27	98	141	269	266	141	3	....	....	....	960
14	....	5	6	30	55	144	234	224	62	9	....	....	769
15	....	....	....	6	16	72	123	179	118	55	6	....	575
16	1	....	....	5	12	14	28	54	88	92	26	1	321
17	....	....	....	....	2	4	8	10	19	56	46	10	155
18	....	....	....	....	....	1	1	....	5	9	30	14	60
19	....	....	....	....	....	....	....	1	2	2	15	9	29
20	....	....	....	....	....	....	....	....	....	1	1	....	2
21	....	....	....	....	....	....	....	....	....	....	1	....	1
22	....	....	....	....	....	....	....	....	....	....	....	1	1
Tt'ls	1,487	1,232	1,162	1,269	1,036	1,024	784	635	298	224	125	35	9,311

The results do not vary much from year to year. In the several years, they have revealed many interesting and some quite amazing facts. Table I shows that in the particular year, the statistics of which I have selected for the purpose of illustration, there were 1,487 pupils in the first-year course. The larger number of these

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pupils are from 6 to 8 years of age, inclusive, but a not inconsiderable number range from 9 to 13 years of age, and one member of this grade is as old as 16. In the second school year, there are 1,232 pupils, the largest number are ranging from 7 to 9 years of age, but a considerable number range from 10 to 14, and a small group is precocious, being but 6 years of age. In the third year there are 1,162 pupils, the majority of whom range from 8 to 11 years; quite a number are from 12 to 14, and a small group of seven children are but 7 years of age. In the fourth school year the largest number of children fall between the ages of 9 and 12, but more than a hundred range from 13 to 16 and two are but 7 years of age and thirty-six are but 8 years of age. The inspection of the figures for each of the twelve years of the school reveals similar conditions for each year. In each school year there are many children seriously retarded. In the primary and grammar grades, these retarded children are from one to six years behind the normal grade; a few are shown to be from one to two years in advance of the normal grade.

In a large number of cases the retardation was due to various causes entirely beyond the reach or control of the school; such, for example, as entering school at an age above the required school age, irregular attendance caused by prolonged sickness, or the necessity of helping to support the family, incorrigibility, truancy, etc. Children who are retarded because of irregular attendance and truancy cannot be studied with sufficient thoroughness to determine their mental and physical status. In the absence of a compulsory attendance law these children cannot be kept continuously under observation. We have, however, great hope of improving the mental, moral and physical condition of many of the children belonging to this group of backward pupils, when the new compulsory attendance law goes into operation at the opening of the next term.

Of the retarded children who have been subjected to examination and treatment during the past five years, 1,487 have been carefully examined and studied by teachers, principals and superintendents, and were treated in school by corrective training or in the home by the family physician. The observation and investigation undertaken by principals and teachers included tests of eye-sight and hearing, the detection of nasal obstruction, enlarged tonsils and suspected adenoid growths, the ascertainment of the presence of decayed teeth, defective speech, nervous troubles and fatigue, malnutrition and mental defects. The result of the examination and subsequent treatment accorded these children is

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shown in Table II. Of the 1,487 cases of retardation examined for mental and physical defects, 1,231, or 82.8 per cent, were found to have defects of some kind; 1,001, or 67.2 per cent, were given pedagogical or medical treatment adapted to ameliorate the condition discovered. Of this number 841 children, or 84.1 per cent, were improved by the treatment given them. As to the remaining 15.9 per cent, many of the cases treated passed from under our observation before the results of the treatment could be satisfactorily determined.

TABLE II.

RECORD OF 1,487 CASES OF RETARDATION (BOYS AND GIRLS) EXAMINED FOR MENTAL AND PHYSICAL DEFECTS.

DEFECTS	PRESENTING DEFECTS		TREATED		IMPROVED		
	No.	Percentage	No.	Percentage	No.	Percentage	Percentage of those treated
Of some kind	1,231	82.8	1,001	67.2	841	56.6	84.1
Sight	1,202	80.8	956	64.3	723	48.6	75.6
Hearing	232	15.6	120	8.1	29	1.9	24.2
Speech	102	6.9	10	0.7	5	0.3	50.0
Enlarged tonsils	315	21.2	203	13.7	198	13.3	97.5
Nasal stenosis	245	16.5	150	10.1	120	8.1	80.0
Adenoids	40	2.7	28	1.8	28	1.8	100.0
Badly decayed teeth	99	6.7	90	6.4	.....	.....	.....
Finger twitches	149	10.0	78	5.2	.....	.....	.....
Malnutrition	332	22.3	300	20.2	238	16.0	79.3
Nervousness	672	45.2	600	40.3	421	28.3	70.1
Fatigue	321	21.6	300	20.2	296	19.9	98.7
Mental defects	285	19.2	.....	.....	.....	.....	.....

Table II analyzes the causes of retardation and the results of treatment with respect to the discovered conditions. Thus 1,202, or 80.8 per cent, of the children had defective eyesight. Very nearly all the children who had defects of any kind had defective eye-sight. The next largest defect to be noted in the table is nervousness, with 45.2 per cent. Enlarged tonsils with 21.2 per cent, malnutrition with 22.3 per cent, and fatigue with 21.6 per cent come next in order, and are of about equal frequency. Mental defects are present in 19.2 per cent of the cases. Nasal stenosis is observed in 16.5 per cent, finger twitches are observed in 10 per cent, defective speech in 6.9 per cent, badly decayed teeth

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in 6.7 per cent of the cases, adenoids in 2.7 per cent. It is quite possible that many of these classes of defect occurred more often than this table shows them to have appeared. The work was done without the assistance of the expert psychologist and physician. Similar defects may have existed in other cases not discovered by us. The first work of this kind must naturally be liable to some errors of omission.

The column showing the percentages of cases improved by treatment is of interest. The 28 cases of adenoids treated all showed improvement. Over 90 per cent of improvement is shown in those cases manifesting fatigue or presenting enlarged tonsils. The record of improvement in cases suffering from malnutrition, defective eye-sight, nasal stenosis, and nervousness is also worthy of mention. Three-fourths of the cases treated were improved. Of the 120 children who were treated for defective hearing about one-fourth were improved by the methods of treatment. Of the 10 cases of defective speech, one-half are reported as improved.

These results were secured through the hearty co-operation of teachers and principals, in the absence of specialists trained in mental and physical diagnosis. The results obtained in the limited time which could be given to this work, were of necessity crude and tentative; they were, however, sufficiently exact to show that many of the grosser causes of backwardness and mental retardation can be correctly diagnosed by class teachers untrained in the use of anthropometric and psycho-physical measurements. They show, also, that much can be done without expert intervention for the amelioration of many whose school life is a constant struggle against handicaps that can be removed by the exercise of a little good judgment, tactful procedure, and genuine human sympathy.

The careful diagnosis and correct interpretation of physical characteristics is of inestimable value to the teacher in understanding her pupils, when such study is supplemented by more or less detailed observation of the different manifestations of intellectual activity. It is certainly true that in a general way mental condition and activity are portrayed in physical characteristics, but in accounting for a child's readiness or dullness in profiting by the discipline of the school room it is necessary for the teacher to observe carefully both mental and physical attributes.

The aim of these studies was not to determine how many more children could be promoted by discovering certain physical, temperamental and environmental peculiarities as the causes of retardation. Rather was it through a correct interpretation of

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individual characteristics and conditions to solve the problem of placing each child in the best relation to the educational forces and instrumentalities at our command, to the end that he may not be hindered by any convention, tradition, prescription group, or class standard; in other words, to utilize all his available energy without waste. We have made only a beginning in this important, work and there is much yet to be done. The problem involves more than the determination of a child's capabilities in terms of the grade fiction.

The presentation of typical cases, the method of diagnosis and corrective training and treatment, the co-operation of the home in medical treatment, and the results secured must be left for another article.

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THE NEED FOR SPECIAL CLASSES IN THE PUBLIC SCHOOLS.

By J. D. Heilman,

Harrison Fellow in Pedagogy, University of Pennsylvania.

The April number of The Psychological Clinic contains an article by Superintendent Bryan, of Camden, N. J., on the "Extent and Causes of Retardation." In treating of the extent of retardation in the public schools of his city for the school year 1905-06, he shows that 72 per cent of the pupils were older by at least one year than the age assumed by the school system to be the standard age for each of the several grades; 47 per cent were more than one year older than the standard age; 26 per cent more than two years older, and 12 per cent more than three years older. These figures give some idea of the amount of retardation in the schools of Camden, but this state of affairs also obtains in other cities. By examining the school report of New York City for 1903-04, and that of Kansas City for 1902-03, I found that the relative number of retarded children in these cities corresponded closely to that of Camden. The percentages for New York City, given in the above order, are 72, 40, 19, and 9; and for Kansas City, 72, 42, 19, and 5. As the school systems of these cities rank among the best in this country, I think it is not too bold an assumption to maintain that pedagogical retardation of surprisingly large proportions is both a widespread and a chronic affliction of our public schools.

Convinced of the nature and extent of retardation, measured in terms of school progress, I was easily persuaded to make a study of its causes. I began my work by subjecting to personal examination the 26 per cent group of Camden's retarded children,—those more than two years older than the standard age for their respective grades. Having just finished my work, I am far from ready to make known the results of the investigation, but I am prepared to say that school authorities, in failing to provide instruction which is adapted to the mental capacity and organization of many school children, are in a large measure responsible for the retarded progress, incorrigibility and truancy of a considerable percentage of pupils. I am preparing my material for publication in the form of a monograph, which will present a detailed analysis of the causes of retardation thorughout a city school system.

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No school system, however, need or can afford to wait until statistics of retardation have been gathered and analyzed by experts. Supervising principals and teachers are already aware of the existence of children in their schools who are unable to progress in the grades with normal children. Many children, indeed, who have been driven into the school-room by legal compulsion are totally unable to make the least acquisition, because an effective appeal to their mental capacities cannot be made without some reference to personal peculiarities of mind and body. Unable to take any part in school work, the children experience neither the pleasure nor the encouragement derived from accomplishment. Deprived of this great incentive to school industry, out of harmony with school discipline, often inimical to their schoolmates, a burden to their teachers and a weariness to themselves, they defy the authorities of school and state, developing into truants and some of them finally into criminals to make society repent of its failure to provide properly for their intellectual and moral growth.

Many cities have already in operation a system of special schools adapted to truants and incorrigibles. Some have even begun to make provision for the special training of backward children. It is not generally known how numerous the children are who require special treatment. The organization of a small number of special schools for a large city like Philadelphia is sometimes advocated as a solution of the problem. Such provision is entirely inadequate. It is a conservative estimate that every school of a thousand children contains a sufficient number of retarded cases to warrant the establishment of a special class for the retarded and mentally defective children.

This statement does not imply that in every school of a thousand children there will be forty or more mentally defective children. The number of retarded children assigned to a single teacher must be strictly limited. The Germans, who have far outstripped us in this work, regard twenty as the maximum number to be assigned to a single teacher. This is the practice in most of their schools; in Leipzig the number is limited to fifteen. Where the children are selected from the rest of the school to form a special class, Dr. Görke contends that the number of pupils should not exceed twelve to fifteen; while Ziehen fixes the number at from eight to ten.

If, then, it be admitted that the special class for backward children should not be composed of more than ten to twenty pupils, may we expect to find that every school of a thousand pupils has a sufficient number of backward cases to form a special

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class? This article, which is based upon an examination of all the very backward cases in a single school, points to an affirmative answer. I undertook the examination to assist the supervising principal in determining the mental and physical characteristics of those children whom the grade teachers reported as deficient in progress. The results in this school may be taken as typical of what will be found in many schools of any large city. The name and location of the school are omitted because they are not necessary for the purposes of this article, and because it is desired to give no occasion for criticism on the part of those who regard this kind of investigation as likely to give offense to parents. The fear of the opposition of parents to the examination of their children is much exaggerated. Most parents are more than gratified at every sign of increased interest in their children shown by the school authorities. In more than a thousand cases examined by me during the past year, only one child refused to take the examination because of parental objection.

Twenty-nine cases were reported to the supervising principal. I began my work with the examination of these cases. The supervising principal reported other cases and my examination is now being extended to those children who will fail to be promoted on their record for the year. Of the cases coming thus under my observation I have selected twenty for this report. They are all from the first three grades; although they are the worst cases in these grades, there are doubtless other children in the school very nearly, if not quite, as backward as some of these. The total number of children in the first three grades from which this group of twenty is drawn is nine hundred and twenty-eight. The total registration of the school is close to seventeen hundred.

For the benefit of the skeptic who may doubt the existence of twenty subnormal children among nine hundred and twenty-eight children of the first three years, I present a brief sketch of these twenty cases.

With respect to their capacity to profit by the instruction of the public schools, they may be classified under three heads:

1. Children who belong in special institutions but who, under present conditions, must be provided for by the public school system.

2. Children who can never be expected to reach the grade standard of the normal child.

3. Children who may be expected, after one or more years of special treatment, to make moderate progress in the regular grades.

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The determination of the group to which a particular child belongs is difficult and often uncertain. The classification is based chiefly on the present mental status, though in some instances it must be determined with reference to the future condition of the child. To predict the outcome of special training with any degree of certainty, the child should have been taught for a year or more in a special class. Its physical defects also should have been corrected wherever possible. There is likely to be a difference of opinion as to the grade of a child's intelligence. In the long run, those most competent to judge will be the teachers and supervising principals who have had the children under prolonged observation. This observation, to be effective, must call to its aid careful examination and study of individual charcteristics.

1. *Children who belong in special institutions, but who, under present conditions, must be provided for by the public school system.*

Case I. A girl eleven years old. She is in her third school year, but is still in the first grade with no hope of promotion at the end of this year. She has acquired practically nothing of the school curriculum and does not even know her letters. She can copy combinations of letters, but they mean nothing to her. The child is a middle-grade imbecile. She attends school very regularly, but her conduct is deficient. She sulks for days, and is impulsive and stubborn. Her parentage is Irish; the home care and discipline are very poor. I could not test her eyesight and hearing because she refused to come into the office, nor did she respond for this purpose to her teacher in the school room. I could not even see her face, because she threw her head down upon her arms and finally crept under her desk.

Case II. A girl aged nine years. She has attended school for one year, and is in the lowest class of the first grade. With some assistance she can count to 17, but does not recognize words and is unable to copy any writing. She barely reaches the level of a high-grade imbecile. Her attendance is very regular and conduct good. Her parents are Russian Jews who speak Yiddish at home. The home care and discipline are fair, but the support poor. Her health and nutrition are only medium. She has tea and bread for breakfast and also drinks tea at supper. Vision is $\frac{15}{20}$ with glasses and $\frac{15}{40}$ without them. Hearing is also somewhat defective. Muscular co-ordination is poor. She has crowded and decayed teeth, enlarged tonsils, and contracted chest. Her narrow forehead indicates a deficiency of the pre-frontal lobes, and her hands are cold and cyanosed.

Case III. A boy nearly seven years old. This is his tenth month in school and his progress is nil. He can neither write, count, nor copy words. He seldom attempts to talk. He is an imbecile of barely middle grade. His attendance is regular, but his conduct is deficient. He

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is shy, very nervous and wilful. The home language is English, although the parents are Russian Jews. The mother is an intelligent woman, very solicitous about her child, whom she is unable to discipline. His health is poor, but nutrition and home care are good. Vision $\frac{15}{60}$: internal strabismus. Hearing seemed normal. His powers of co-ordination are very poor. The tonsils are hypertrophied, and the naso-pharynx obstructed. His eyes are widely spaced, and there is some cranial asymmetry.

2. *Children who can never be expected to reach the grade standard of the normal child.*

Case IV. A boy almost eight years old. His first year at school. He can neither read nor write. He knows about ten words and can count to ten. He is an extreme case of aprosexia. On account of his physical condition which could be improved, it is difficult to judge of his future intelligence, but at present it is not above that of a high-grade imbecile. Attendance is irregular and conduct deficient. His parents are Russian Jews and the home language Yiddish. Home care and discipline are good. The boy's health is fair, but his nutrition is rather poor. He drinks coffee at breakfast and tea in the evening. Vision is only $\frac{15}{80}$. Hearing does not appear to be defective. Co-ordination is medium, but he is very inert. He is a mouth breather, with decayed teeth and exceedingly large tonsils. His hands are blue and cold, and the cranium is small.

Case V. At the end of his fourth school year, this boy, whose age is ten years, is still in the lowest class of the first grade. He cannot read nor add and subtract, but he can write and count to ten. He may be called a high-grade imbecile, for under special training he has shown improvement. He is a confirmed truant, very deficient in conduct, but when he attended a special class he was neither a truant nor incorrigible. He is sullen and wilful. He was born in Italy and the language of the home is Italian. Home care, discipline, and support are poor. His health and nutrition are good. At supper he habitually drinks coffee and beer. His vision is only $\frac{15}{80}$; internal strabismus. Hearing is normal; co-ordination medium. His expression is dull, forehead low, and cranium brachicephalic. His hands are cyanosed.

He is one of several degenerate children. Cases VII and XIV are brothers of his. He has a sister three years old who is still unable to sit up. This case is interesting because when this boy was sent for several hours a week to a special trainer of deficient children there was a marked improvement in his conduct at home and in school. He also took an interest in his school work and did not play truant. Since the special instruction has ceased, he has lost interest and is again incorrigible and a truant.

Case VI. A boy seven years old; has attended school for one year. He recognizes a few words, counts to about twenty, can add a little,

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but is unable to write. Improved physical conditions might place him above the high-grade imbecile. He attends school regularly, but his conduct is very deficient. His teacher thinks he is likely to become a moral case. He is bold, but has a vacillating will. His parents are Russian Jews and speak Yiddish in the home. The home care, discipline and support are poor. His breakfast consists of coffee, bread and cake. He has beer for lunch and drinks tea in the evening. Sight is $\frac{15}{20}$. Hearing may be somewhat below the normal, especially in the left ear. Co-ordination is fair. His teeth are decayed to the gums, tonsils enlarged, nasal passages obstructed, and there is a marked cranial asymmetry in the frontal region.

Case VII. A brother to Case V, seven years of age. Has been one year at school, but can recognize only a few words, count to ten, and do a little scribbling. He may rank somewhat above the high-grade imbecile in intelligence. School attendance is regular, but conduct deficient. He is shy, sullen, stolid, and stubborn. Birthplace Italy; home language Italian. The home care, support and discipline are poor. His nutrition and health are good. Beer and coffee constitute his regular evening stimulants. His attention was so poor and his answers so uncertain that his sight could not be tested with the illiterate card; strabismus. Hearing seems normal. His leptocephalic skull with marked flattening all along the temporal and parietal regions, indicates a decided deficiency of gray matter.

Case VIII. This unfortunate girl is seventeen years old and only in the third grade. She has attended school three years, having come from Russia four years ago, but her progress is so deficient that her teacher reports her as practically unable to do any third-grade work. Her general behavior is so little below the normal that she may be rated as backward and above the grade of imbecile. Her attendance is regular and her conduct excellent. The care of the home is fair; the discipline poor; and the support very poor. Her health and nutrition seem poor. She has coffee and bread for breakfast and drinks tea at supper. Vision $\frac{20}{40}$. Hearing normal. Co-ordination is rather poor, and she is very inert. She is a victim of hemiplegia with scoliosis, which she says was consequent upon scarlet fever. The right arm and leg are paralyzed. The foot is clubbed and the hand contractured. Both show the usual vaso-motor disturbances. Her condition is pitiable. Her father, she says, is unable to keep her, and so she means to go to work after her hand is straightened.

3. *Children who may be expected, after one or more years of special treatment, to make moderate progress in the regular grades.*

Case IX. A girl, in her eighth year, has been only ten months in school. She can count to ten. Her inability to progress is undoubtedly due to a number of remediable causes. She is very shy, stubborn and inert. Co-ordination is medium. Her sight and hearing appear to be

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normal. Her parents are Russian Jews and speak Yiddish. The father is an inebriate and at present is confined in an institution for the insane. The family is supported by a Jewish society on ten dollars a month, five of which are devoted to the payment of rent. The home care, support and discipline are the worst possible. Her health is very poor, and her haggard look and sunken eyes seem to indicate something more serious than bad nutrition.

Case X. This is an eight-year-old boy, in the lowest class of the first grade. He has attended school one year, and is still unable to read. He knows about twenty words, writes a little, counts to forty, and can add and subtract numbers up to ten. In reciting he plays the parrot by calling out what he hears the other children say. He is backward in intelligence; attendance is very regular; conduct very deficient. The support and care of the home are poor, but his health and nutrition seem good. He drinks tea in the morning and evening. Co-ordination is fair. Vision is $\frac{6}{20}$; hearing normal. His voice is obstructed, teeth decayed, and tonsils enlarged. He breathes through his mouth and has a contracted chest. The hands are cold and much cyanosed.

Case XI. The age of this girl is ten years, but this is her first year at school. Her writing is very good. She knows no words, is unable to read, and can count only with the assistance of blocks. She is no doubt retarded by her ignorance of the English language, for she was born in Russia. She is a backward case, but talks rather intelligently . She is inclined to be sulky and wilful; conduct is good; attendance irregular. The care of the home is good, support poor, discipline fair. She has good health and is well nourished. Her stimulants are coffee in the morning, tea at dinner, and beer in the evening. She has good powers of co-ordination. Both sight and hearing are normal. The teeth are decayed; the tonsils hypertrophied; and the hands cold and blue.

Case XII. A backward boy, six years old, who has attended school one year. His writing is very poor and many letters are in mirror script. He makes many errors in copying his written work, counts to about ten, knows about twenty words, but cannot do the simplest addition or subtraction. His conduct is fair; attendance regular. His parentage is Russian Jewish, and he was born in Russia. Home care and support are medium. He is healthy and looks well fed. In the morning his diet consists of cocoa and bread. At dinner he drinks tea, and in the evening beer. He co-ordinates his movements well; has $\frac{6}{20}$ vision, and probably normal hearing. His tonsils are enlarged and his nostrils and nasopharynx filled with mucous. His hands are cold and slightly cyanosed.

Case XIII. Another first grade boy who is six years old and has attended school one year. Some of his writing can be read, but he copies words incorrectly. He can scarcely count to ten, but can add numbers up to three. He knows hardly more than ten words. Although he is backward, his case is rather hopeful. He appears to be exceedingly shy

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and is rather sullen and obstinate. His conduct is deficient and his attendance irregular. The parents are Italian. The home care is poor and the support very poor. His health is poor and his nutrition only medium. Co-ordination good; vision $\frac{6}{20}$; hearing normal. The head is well shaped. When asked to do anything by his teacher he invariably rubs his fists into his eyes, then covers his face with his arms and frequently begins to cry.

Case XIV. The second brother to Case V, aged nine years. At the end of his third school year he is still in the lowest class of the second grade, can add small sums, but knows no tables; reads in the second reader, but only with much assistance. He is far more intelligent than his brother, and may be classed as backward. He is inclined to be bold, surly and stubborn; his conduct approaches incorrigibility, and he is so rude to the other pupils that he may be called vicious. His attendance is regular, though he is an occasional truant. He appears well nourished and healthy. He drinks milk in the morning, coffee at lunch, and several glasses of beer in the evening. Co-ordination is fair; vision $\frac{6}{60}$ with strabismus. His hearing is rather acute. His head is much better shaped than that of either of his brothers, but his teacher says he sometimes falls into a stupor from which he is aroused only by being shaken. He may suffer from *petit mal.*

Case XV. A girl, nine years old. Has attended school three years, but cannot do second-grade work satisfactorily. Her teacher thought she could not even count properly, though she knows the tables to five inclusive, and can add a little. Her birthplace is Russia. The home care is fair and the discipline good, but they are poor people. Her health and nutrition appear good. She drinks coffee and milk at breakfast, used to drink beer at dinner, and has tea for supper. She co-ordinates well and has normal sight and hearing. She has a sleepy look, breathes through her mouth, has an overgrowth of lymphoid tissue in the back of her throat, and the nasopharynx seems obstructed. Her hands have a nervous balance.

Case XVI. A boy who will be twelve years old in August. This is his fourth year at the school he is attending, but he is still in the lowest class of the second grade, and his progress this year has been very deficient. He reads in the primer with some assistance, knows the two-times table, can do simple addition and subtraction, and writes well. He is very well behaved, but attends school irregularly. His parents are Swedes, who speak the German and English languages in the home. The support of the home is poor; care fair, and discipline good. He has poor health and is not well nourished. His sight and hearing are normal, and his co-ordination is good. His voice is decidedly nasal, and he breathes through his mouth. He had adenoids and tonsils removed last summer, but on recommendation was taken to a specialist for the nose, who is now treating him for adenoids. His palate is only about one centimeter wide; his forehead is narrow, and his hand-balance very nervous.

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Case XVII. A boy, ten years old; has attended school at least three years. He is in the third class of the second grade and has made deficient progress this year. He counts well, and his addition and subtraction are done by counting. He is unable to repeat any part of the multiplication table. He reads and spells fairly well. Owing to his extreme stupidity it took at least five minutes' training before he could be tested with the illiterate card, and even then he was not able to respond correctly to the upright position of the character. He is bold, sullen, stolid, and stubborn. His parents are Russian Jews, and the home language is Yiddish. The care of the home is good and the support medium. He has fairly good health and good nutrition. He drinks coffee at breakfast; sometimes he has beer once, sometimes twice a day. Co-ordination is fair; sight $\frac{1}{2}\frac{5}{0}$; hearing normal. The teeth are decayed. His sullen disposition, stolid appearance, mouth breathing, and enlarged tonsils are indicative of adenoids.

Case XVIII. A girl who will be ten years old in October. In the lowest class of the third grade, she made no progress this year, and takes no interest in anything. She knows the tables to the fifth inclusive, but cannot add, subtract, or multiply. She behaves fairly well and attends school regularly. American parentage. The home care and discipline are good, and the support is medium. Health and nutrition are good. She drinks coffee in the morning. She has fair ability in co-ordinate movement; sight normal; hearing of the right ear slightly defective. Her teeth are decayed and notched. She breathes through her mouth and is an adenoid case under treatment.

Case XIX. A boy, fourteen years old. Four years ago he was still in the first grade; at present he is only in the third, or lowest class of the third grade; his progress this year has been deficient. He is very childish, unable to repeat stories, has a bad memory, and cannot do problems in arithmetic. Sometimes he knows his tables, and sometimes he can add, subtract and divide. He can read fairly well in the second reader. He will undoubtedly never get beyond the third grade. He is very shy, stolid and weak-willed. His conduct is excellent and attendance very regular. His parents are Russian Jews. The home care is good, discipline and support medium. His health and nutrition are apparently good. Drinks coffee, tea and beer. Co-ordination is fair; vision $\frac{2}{6}\frac{0}{0}$; hearing of the left ear defective. His posterior glands are enlarged.

Case XX. A girl, fourteen years old. Has attended school seven years, and is regarded as exceedingly deficient in the third class of the third grade. What she acquires one day is lost the next. She knows her tables and can do the fundamental operations, but no problems. She is a very poor reader. Like the last case, she may never pass beyond this grade on any other merit than age. She is quite bold, surly, stolid and intractable; her conduct is very deficient; her attendance is regular, though she is an occasional truant. She is of Russian Jewish parentage, but one of the home languages is English. The home care and disci-

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pline are poor, and the support medium. She has rather poor health. She appears fairly well nourished, but she eats no breakfast. Her coordination is fair; vision $\frac{2}{6}\frac{0}{0}$ with glasses and without them $\frac{2}{1}\frac{0}{0}\frac{0}{0}$R and $\frac{2}{7}\frac{0}{0}$L; hearing is normal. The teeth are decayed and brittle; the half nearer the cutting edge is thin, rough, pitted, and poorly covered with enamel. Tonsils have been removed. Hands and arms cold and cyanosed; chest contracted. She never sleeps well, and almost every night her mother gives her drops to put her to sleep; she thought the name of the drops was "alcohol." Sometimes, however, she is put to sleep by being allowed to smell at a bottle. These remedies for insomnia were recommended by a relative.

Of these twenty cases, two have been classed as middle-grade imbeciles, four as high-grade imbeciles and fourteen as backward children. Three are considered to be institution cases. It is probable that an even larger number would make better progress in an institution for mentally feeble children. At least eight of them are unlikely to attain the grade standards of the normal child. Twelve of the number may possibly make normal progress in the ordinary grades after they have been taught for a year or more in a special class.

Of the data that may be obtained from collating the statistics of the twenty cases, the most interesting item is that of conduct. The conduct of five was reported to be excellent, of two good, two fair, five deficient, and six very deficient. Nine of the eleven cases of deficient conduct were said to be obstinate or stubborn, and seven were sullen or surly. Of the total number, eleven cases were reported as obstinate or stubborn and eight cases as sullen or surly. One case of deficient conduct was a confirmed truant, and two were occasional truants. This presents an illustrative example of the effect of inappropriate school methods upon backward children. Their deficient conduct is due not only to an unsuitable curriculum and erroneous methods, but also to inability on the teacher's part to understand and properly control the child who deviates in mental and moral character from the usual type.

Five of the children are nervous and thirteen are sluggish and inert or stolid. Most of these children would be improved by the mental training that results from physical exercise under direction and from manual training. Improper and insufficient food and drink are important items in causing mental retardation. Five of these children have poor health and six are not well nourished. A sufficient diet would strengthen their attention and improve their memory. Out of the seventeen cases, fifteen drink habitually tea or coffee or both, and nine (three of whom are girls) drink beer regularly. Some of these children confess that they

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have been drunk, and others may have been intoxicated without having realized their condition.

Four children are mouth breathers; eight have decayed teeth; nine have hypertrophied tonsils, and five probably have adenoids. Decayed teeth are associated with enlarged tonsils in every case. Five children have defective craniums; and one is a hemiplegic. Out of eighteen cases tested, thirteen have subnormal vision; four have strabismus. Four cases are subnormal in hearing.

This list of deficient children, already so long, could easily be increased, for I have the records of a number of others from the same school. I have now before me the record of a boy who has attended school three years and in all this time has not made a single promotion, his progress being very deficient even in his present grade. However, I feel that I have already presented a sufficient number of cases to form at least one special class. The teacher of this class will have few idle moments, even though her pupils are but half the number usually assigned to a grade teacher. As a matter of fact, several of these children should be sent to an institution for feeble-minded children, and two special classes should be formed, one for the permanently backward children and another for children who can be returned to the grades after one or more years in the special class.

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THE INFLUENCE OF PHYSIOLOGICAL AGE UPON SCHOLARSHIP.*

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The term *physiological age* refers to the stage of development in contradistinction to age in years and months, which is the usual method of designating age.

Various evidences of physiological age are tooth appearance, pubescence, change of voice, menstruation, menopause, etc.

Pubescence is an evidence of sexual ripening and the beginning of adolescence. Pubescence in the male is the feature studied in this work. For the purpose, three physiological groups are distinguished, corresponding to three succesive stages of development: (1) prepubescence, (2) pubescence, (3) postpubescence. The percentage of prepubescent, pubescent and postpubescent population in each age group, taken in half years, is given in Table I. This table, which is based on 4,800 records, shows that each chronological age group contains subgroups based upon physiological age.

Table I.

Age in half years	Physiological Groups.		
	Prepubescent.	Pubescent.	Postpubescent.
12.75	69%	25%	6%
13.25	55	26	18
13.75	41	28	31
14.25	26	28	46
14.75	16	24	60
15.25	9	10	70
15.75	5	10	85
16.25	2	4	93
16.75	1	4	95
17.25	0	2	98
17.75	0	0	100

It gives, also, the relative size of these subgroups. These facts have been disregarded hitherto, and the chronological age group treated as if it were homogeneous.

*Syllabus of a paper delivered before the first congress of the National School Hygiene Association of America, held in Washington, D. C., May 6 and 7, 1907.

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It is also apparent that each physiological age group contains individuals who vary much among themselves as to their real physiological age. For instance, the prepubescents are fifty-five per cent of the total number at the age of 13.25 years. Some of these, fourteen per cent of all at that age, will become pubescent within a half year; others, one per cent of all, will not become pubescent until 16.75 years of age. This one per cent is, therefore, three years younger physiologically than the fourteen per cent.

In a similar manner, the individuals in the postpubescent groups vary as to the number of years elapsed since they have passed through their pubescence.

From the above table, the expected number of years required to reach pubescence, with the variability of each age, was calculated for each alternate half-year group. The result is shown in Table II. In a similar manner the average number of years that have elapsed since pubescence has been calculated for each of the half-year groups represented in Table III.

TABLE II.

EXPECTED NUMBER OF YEARS REQUIRED FOR PREPUBESCENTS TO REACH PUBESCENCE.

Half Year Age Group.	*Average in Years.*	*Variability.*
12.75	1.37	± .95
13.75	.97	.79
14.75	.78	.59
15.75	.55	.40

TABLE III.

NUMBER OF YEARS ELAPSED SINCE POSTPUBESCENTS' PUBESCENCE.

Half Year Age Group.	*Average in Years.*	*Variability.*
17.75	3.28	±1.25
16.75	2.43	1.14
15.75	1.64	.98
14.75	1.13	.72
13.75	.70	.61

American born children of German born parents appear to be later in attaining pubescence than American born children of American born parents. This was demonstrated in percentages for each year.

Weight and Pubescence.—Postpubescents average twenty-four per cent to thirty-three per cent heavier than prepubescents of the same age.

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TABLE IV.

AGE IN HALF YEARS	WEIGHT IN KILOGRAMS.		
	PREPUBESCENT.	PUBESCENT.	POSTPUBESCENT.
12.75	35.2	36.6	(50.8)
13.25	35.0	37.2	44.3
13.75	35.4	37.9	43.8
14.25	35.2	38.6	45.4
14.75	36.8	39.0	47.2
15.25	37.9	38.8	47.7
15.75	36.7	41.8	49.3
16.25	(40)	38.3	51.6
16.75	(46.5)	(41.5)	53.5

From Table IV it is evident that any statistics which do not include a reference to physiological age are faulty and incomplete in so far as weight and allied features are concerned. Practically all of our statistical work must be revised in the light of this evidence or disregarded completely.

Height and Pubescence.—Postpubescents average as much as eleven per cent taller than prepubescents of the same age.

TABLE V.

AGE IN HALF YEARS	HEIGHT IN CENTIMETERS.		
	PREPUBESCENT.	PUBESCENT.	POSTPUBESCENT.
12.75	144.0	147.5	150.5
13.25	144.2	148.7	153.9
13.75	145.7	150.4	155.9
14.25	146.6	150.6	157.9
14.75	147.3	151.7	158.9
15.25	149.8	151.5	160.7
15.75	149.8	153.1	162.6
16.25	151.0	152.4	164.6
16.75	(153)	(151.4)	165.4

Table V shows the different average heights of these three physiological age groups for each half year. The error of previous statistical work is clear, and the necessity of recognizing the basis of physiological age in grouping statistical and other records is thoroughly demonstrated.

Strength and Pubescence.—The strength of the muscles of the forearm which flex the fingers was registered by the ordinary grip dynamometer. It showed that the postpubescents averaged about thirty-three per cent stronger than the prepubescents.

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TABLE VI.

AGE IN HALF YEARS	STRENGTH IN KILOGRAMS		
	PREPUBESCENT.	PUBESCENT.	POSTPUBESCENT.
12.75	25.6	28.2	(32.5)
13.25	26.3	28.1	33.6
13.75	27.6	30.4	35.2
14.25	27.3	30.2	37.8
14.75	29.4	30.8	38.3
15.25	29.6	31.1	40.1
15.75	32.5	30.4	42.9
16.25	31.7	29.6	43.8
16.75	(27.5)	33.2	48.3

The variabilities of all these sub-groups have been determined. The prepubescents are least variable, the postpubescents most. There is a very slight increase in the variability of weight and strength in each physiological age as the age in years increase. This is not the case with respect to height. The variabilities at the age of 14.75 are typical:

TABLE VII.

	Prepubescent.	*Pubescent.*	*Postpubescent.*
Weight (kilograms)	±5.18	±5.83	±8.09
Height (centimeters)	±5.96	±6.37	±7.51
Strength (kilograms)	±4.96	±5.66	±8.46

Pubescence and Scholarship.—Success in school should not be taken to imply success in other lines.

Pubescence and School Grade. (*First Method*).—The higher the grade the fewer prepubescents, age for age; hence postpubescents are better in scholarship than prepubescents, and the more advanced a group is in pubescence the better will be the scholarship. This can be expressed by a scale of percentages in which zero means all prepubescents and one hundred all postpubescents. The members of the age group 14.75 are distributed over different school terms (High School) as follows:

TABLE VIII.

First term	57.1 per cent.
Second term	62.7 " "
Third term	69.6 " "
Fourth and fifth terms	83.3 " "

This is typical of all the age groups studied. Since, therefore, the higher the grade the higher the percentage of pubescence, we should expect to find that the higher the grade the greater would

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be the weight, height and strength, which it has been proven are related to pubescence. This is true. Greater height, weight and strength are related to better scholarship because they are all effects of the same cause,—earlier pubescence.*

It is next in order to determine whether there is any correlation between scholarship on the one hand, and weight, height and strength on the other, excepting that which is due to their common relationship to physiological age. To do this it is only necessary to compare the average for weight, etc., of the same *chronological age* and the same *physiological age* groups which differ only in school term. Thirty-one pairs of averages have been compared.

Weight.—The average increase in weight per term is .95 kilograms, taking the 14.75 age group as typical. But the average increase is only .07 kilograms when those of this age and of the same physiological age are taken. Hence .88 kilograms of this is due to correlation with pubescence and only .07 kilogram due to correlation with other factors. Several other factors are to be considered in this connection. We have not taken into consideration the fact that postpubescents vary among themselves as to the time elapsed since pubescence; hence the older postpubescents are in the higher classes and would therefore be heavier. It is possible that if this factor were to be eliminated there would appear a minus instead of a plus relation between scholarship and weight (irrespective of pubescence).

Height.—There is an average movement of plus .66 centimeter in height per term including pubescence, and of plus .36 centimeter per term eliminating pubescence as a factor; this latter is the only part that can possibly be due to other factors than pubescence and, as explained above, may also be due to this factor.

Strength.—There is an average movement of plus 1.34 kilograms in strength, including pubescence, and of plus .36 kilogram in strength excluding this factor.

Conclusion.—By far the greatest part of the correlation of weight, height and strength with scholarship is due to the fact that they are all correlated in common with the pubescence factor.

Scholarship and Pubescence. (Second Method.)—We can determine what influence physiological age may have on success in scholarship by observing the rate of success and failure of each chronological age and physiological age group. Postpubescents

*It was found by Smedley (Forty-sixth Annual Report of the Board of Education, Chicago, Ill., 1899-1900) that the higher the term the greater the height, weight and strength. He failed to observe pubescence or any other sign of physiological age.

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are thus found to be more successful, eighteen per cent failing to pass into the next term as against twenty-seven per cent of failure for the prepubescents, at thirteen years of age. At fourteen years the percentages of failure are twenty-four and thirty-four respectively; at fifteen years, twenty-nine and thirty-six. (These figures are taken from first year students in a High School.)

Conclusions.—Earlier pubescence favors good scholarship; later pubescence, poorer scholarship. This should be taken into consideration by all those who have the care of the pubescent.

Growth Rates.—Rapidity of growth depends upon physiological age and not upon age in years. Prepubescents of every age grow slowly in weight and height and strength. The acceleration begins as the stage of pubescence is reached and continues a variable time into postpubescence. There is absolutely no such thing as a prepubescent "spurt." The first year of postpubescence is the year of greatest acceleration in all growths, regardless of its chronological relation. To give any figures of growth rates for a chronological age is absurd.

Rapidity of Development.—Children are much more apt to begin pubescence and complete it during the five warmer months of the year than during the seven colder months.

Teeth as Evidence of Physiological Age.—About one thousand elementary school boys from ten to fifteen years of age were examined as to weight, height and presence or absence of permanent canines and second molars. Those with a full set of permanent canines averaged from five to seventeen pounds heavier and from one-half an inch to three inches taller than those with none. The molar grouping showed a somewhat stronger correlation. Tooth appearance had but a slight relation to actual age.

Menstruation as Evidence of Physiological Age.—A preliminary study of weight, height and strength demonstrated that menstruees are taller, heavier and stronger than non-menstruees. Weight showed the greatest correlation.

General Conclusion.—In future all of our thought concerning the years nine to seventeen must be released from the idea of chronological age. Statistics for groups or individuals respecting weight, height, strength, scholarship, mental or physical endurance, medical or social conditions, that are not referred to physiological age are inconsequential and misleading.

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Nervous and Mental Diseases of Children. Die Geisteskrankheiten des Kindesalters, mit besonderer Berücksichtigung des Schulpflichtigen Alters. By Professor Th. Ziehen, 3 Parts, Berlin: Reuther und Reichard.

Defective children, their nature, care, and training are to-day the subject of scientific thought and experiment. A large and ever growing literature bears striking testimony to the interest in this work shown by medical men and alienists. Germany, more than any other country, has comprehended the diversified character of the problem; and under each of the numerous rubrics of defective children—sense defects, juvenile delinquents, mental arrest, and the varied neuroses common to the young—German psychologists have made notable contributions.

Professor Theodore Ziehen, now of the University of Berlin and formerly at Jena, is well and favorably known to students of physiological psychology and psychiatry and his recent monographs on the nervous and mental diseases of children will be read with interest by students of child psychology and allied subjects.

Hysteria, which, as Professor Ziehen notes, increases up to the fifteenth year and reaches its height at the time of puberty, can only in a few cases be traced to organic brain disease or spinal paralysis. While characterized by an abnormal increase in the bodily expression of emotions, the emotions do not always produce this increased activity. Its marked physical symptoms are speech defects, particularly stuttering, convulsive contraction of the eyelids, trembling of the extremities, and paralysis of the muscles used in walking. The hysterical child is often depressed before he is conscious of the cause of his depression. Egotism is even more apparent with hysterical children than with hysterical adults. Although the child so afflicted may make a temporary sacrifice under the influence of an extraordinarily strong idea, he is in general incapable of objective, impersonal interests. He himself is the customary central point of his changing emotions. This possession of a single dominant idea is noteworthy. He lacks power of voluntary attention and logical thought, and his recollections are often modified or false; but his capacity for deception and treachery suggests mental power of no mean order.

Falsehood comes naturally to hysterical children, but they are often able to draw the line between pathological inventions and conscious untruths. The chief motives for falsehood seem to be the desire to make themselves interesting, to gratify some active desire, or to avert punishment. Vanity likewise plays a leading rôle. They like to say that they have already accomplished that which they really hope to accomplish in the future. These phantasies are often concerned with the writ-

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ing of dramas, novels, and poems. They come to hysterical children with great frequency and cause them to neglect school work, play, food, and sleep.

Sense delusions are common to hysterical children. Generally they occur in the form of visions, illusions, and hallucinations. The dream-life, likewise, is abnormally lively, resulting frequently in somnambulism. The desire to pilfer dainties and sweets, as well as money, is also common; and the latter is not infrequently stolen for no other reason than the pleasure gained from stealing.

With reference to the treatment of hysteria, Professor Ziehen maintains that it is generally safest to withdraw the child from its immediate family. Parents often foster the disease unconsciously by offering the child a bad example in their own neurotic tendencies. He does not believe in the congregation of hysterical children in sanitariums or special schools, but suggests that they be placed in healthy families, and preferably in the families of physicians. So far as school work is concerned, the hysterical child can be trained in the same way as the normal child.

Neurasthenia, notes Professor Ziehen, is caused by the fatigue of the central nervous system and it may be due (1) to a weak nervous system, (2) to nervous strain, (3) to insufficient sleep, (4) to malnutrition or (5) to a chronic toxic condition. He makes two statements which do not tally with the reviewer's experience: (1) That neurasthenia is less common among school children than hysteria, and (2) that it occurs more frequently among boys than girls.

A characteristic symptom of neurasthenia is motor exhaustion, although paralysis, which is so common in hysteria, seldom occurs. The child tires easily in walking, playing, writing, and the like. When reading the print becomes blurred, the eyes ache and the body trembles with exhaustion. Such children have restless and disturbed nights owing to a habit of talking continually in their sleep.

The progress of the disease is remittent, progressive, or retrogressive, depending upon the effectiveness of the treatment. If the parents are careful to follow direction, the neurasthenic child need not be removed from the home. Constant attention must be given to his food and rest. The diet should consist of milk, eggs, fruit and vegetables; tea, coffee and meat should be excluded. After study periods, he should have long rest periods. Walking and other forms of active exercise should not be allowed until he is gradually habituated to such forms of activity.

Chorea, which is so insidious in its development, is apt to be overlooked by parents and teachers until it has reached a rather serious stage. In its incipient stage the power of motor inhibition is its chief symptom. Choreic children become angered easily; they are singularly sensitive, and they are more easily frightened than normal children. Loss of the power of voluntary attention is early apparent, and even in conversation such children are apt to lose the thread. As the disease

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develops they become passionate, disobedient and quarrelsome. Suicide and juvenile crime are not infrequently the result of such impulses. Isolation and rest are what the choreic child most needs.

Mania and allied mental and nervous diseases are discussed in the same simple but helpful manner. The work of Professor Zichen is intended primarily for teachers and parents who are ignorant of the technicalities of medical science; and considered from this point of view his book is a praiseworthy contribution to the literature of the psychology, pathology, and hygiene of childhood.

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NEWS AND COMMENT.

The Massachusetts Board of Education in January, 1907, issued a little pamphlet containing suggestions to teachers and school officials regarding medical inspection of the schools. The book is designed to assist in the effectual execution of the act of 1906, which requires the school committees of every city and town to cause every child in the public schools to be separately and carefully tested and examined at least once in every school year. The object in view is to ascertain whether he is suffering from defects of sight or hearing, or from any other disability or defect tending to prevent his receiving the full benefit of his school work, or whether a modification of the school work is advisable in order to prevent injury to the child or to secure the best educational results.

Infectious diseases, diseases of the eye, ear, throat and nose, skin, bones and joints, teeth, children's diseases and nervous diseases, are discussed by specialists, their evils are pointed out and also the signs by which their presence may be detected.

During 1905-06 an examination of the eyes of 883 students of the University of Pennsylvania was conducted by Dr. William Campbell Posey and Dr. R. Tait McKenzie. The results show that 30 per cent of the students had defective vision and also that there was a steady increase of myopia during each of the four college years: 12¾ per cent of the students in the two lower classes were myopic, while 19¾ per cent of those in the two upper classes were myopic, an increase of about 2½ per cent of myopia for each college year.

The finding of so large a percentage of progressive eye defects in university students emphasizes the necessity of a more thorough examination of the eyes of the children in the lower schools in order that their defects may be corrected early in life before the strain of study has unnecessarily increased them.

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"Promotion and Retardation in the Elementary Schools" is the title of a little pamphlet in which Dr. Corman presents and interprets the collated exemption and promotion records of the Philadelphia public schools for June, 1905, and June, 1906.

The tables present by districts and also by grades the total number of children enrolled, the number exempted, the number passed on examination, the total number promoted, the average number of months in a grade, the number of children who spent twenty months or more in a grade, and the number of children who spent thirty months or more in a grade.

These tables bring to light the grave fact that more than one-fourth of all the pupils failed of promotion each year; also that the largest percentage of promotion failures occur in the four lowest grades. Dr. Cornman attributes the failure to the conditions existing in these grades,—overcrowding, half-time, inexperienced teachers, and lack of supervision. He does not mention the possibility that the greater success of the higher grades may be partially due to the fact that many children in the lower grades never reach them: these children either drop out of school or remain in the elementary grades.

As regards the number of retarded children in the schools, the tables show that from 9 to 10 per cent of the pupils spend twenty months or more in one grade; while from .5 to .6 per cent, or about 720 children, spend thirty months or more in one grade. It is evident, as Dr. Cornman states, that a child who spends three years or more in a grade through which the average pupils passes in one year is "different" from his classmates. Such children are unquestionably backward, and the classes for backward children should be increased in number in order to accommodate these 720 children.

Dr. F. L. Wells, lecturer in psychology in Columbia University, has been appointed Pathological Psychologist in McLean Hospital, Waverly, Mass.

In Belgium the movement to care for defective children after they leave the special schools was organized in 1901 by the Société Protectrice de l'Enfance anormale. The after-care system is not yet completely developed, but in Brussels and Antwerp its usefulness has been thoroughly demonstrated.

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The Psychological Clinic

VOL. I. No. 5. OCTOBER 15, 1907.

THE MENTAL CONDITION OF JUVENILE DELINQUENTS.

BY ISADOR H. CORIAT, M.D.

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Parallel with the recent establishment of special juvenile courts, there has arisen a new and more vital interest in juvenile delinquency. What was formerly a purely academical study has now become a psycho-sociological problem of the highest importance. For a thorough comprehension of the subject, the recent studies in the psychology of adolescence and puberty, both in its normal and abnormal aspects, are of great value. The subject is so wide, however, that I can give only briefly a few results of personal observation and shall limit myself, as far as possible, to the mental and nervous disorders of juvenile offenders. I shall attempt to answer the question, tentatively at least, whether these disorders form the basic responsibility of the delinquency, or whether cases exist in which these disorders are merely episodic and accidental. For a more complete account the reader is referred to Morrison's "Juvenile Offender," more particularly to the chapter dealing with the mental condition of juvenile offenders, although this chapter appears to me the weakest portion of an otherwise admirable work, and also to the chapter on juvenile faults, abnormalities and crimes in Vol. I of Hall's "Adolescence."

Stanley Hall says, "In all civilized lands criminal statistics show two sad and significant facts: First, there is a marked increase of crime at the age of twelve to fourteen, not in crimes of one, but of all kinds, and that this increase continues for a number of years. While the percentage of certain grave crimes increases to mature manhood, adolescence is pre-eminently the criminal age when most first commitments occur and most vicious careers are begun. The second fact is, that the proportion of juvenile delinquents seems to be everywhere increasing and crime is more and more precocious." The marked increase in the pre-

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cocity of crime, according to Terman, can be explained on three suppositions, "First, increase in criminal precocity may mean that the criminal born reach naturally an earlier maturity than formerely. Second, if we grant with Ferri that criminal precocity is almost an invariable mark of the ~~criminal born~~, then we now have more born criminals than ever before. Or, third, that modern environment is becoming more and more suited to draw out and exaggerate the criminal propensities." Plotting a curve of juvenile crime as prepared from the statistics of the eleventh census of 1890, I find that this curve runs practically parallel to the time of onset of adolescent insanity (dementia praecox), as shown in my collection of cases; that is, there is a very sudden rise in the curve between the ages of ten and fifteen.

It is not my intention to inquire into the cause of this increase and this remarkable parallel. For the purposes of this paper it is sufficient to state that this may be due to child labor and the exposure by employers of inexperienced children to temptation, to contact with evil companions, the pernicious influence of children's gangs, to many of the sociological factors which make up our complex civilization, to the pubescent outburst of inherited tendencies, the environment of indifferent and neglectful parental conditions, atavistic reversions to savage impulses and, finally, to various mental and nervous diseases. In many cases these latter make the unfortunate juvenile offender irresponsible for his acts. This important field has remained almost totally unexplored by criminologists, sociologists and even psychiatrists. Its great importance as a factor in juvenile crime cannot be overlooked, and it is daily forced upon our attention. The justices of the various newly-established juvenile courts are also becoming alive to its importance, as is witnessed by the increasing number of children who are submitted to the alienist or neurologist for examination. The field is a new one, however, and it is hoped that the few facts I intend to touch upon and elaborate in the course of this paper will stimulate further study and research in this direction. Therefore I shall have little to say on juvenile crime in general, except so far as it will serve to elucidate the facts at hand.

The new Massachusetts act of 1906 (Chap. 413) distinguishes between delinquent and wayward children, but for our purpose the terms juvenile delinquency and waywardness had best be interpreted as synonymous and will be held to comprise all those offenses against law and society committed between the ages of seven and seventeen years. Judge Julius M. Mayer has given us

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a very practical working classification of juvenile delinquency. His scheme comprises (1) mischievous children; (2) children who commit crimes because of temptation; (3) children who commit crimes because of environment and bad associations; (4) children who commit crimes because of parental neglect or incompetency; (5) children with what may be called criminal tendencies; (6) children who are runaways and vagrants; (7) disorderly and ungovernable children; (8) children who are neglected or abused by their parents. To this I will add a ninth group, namely: those children who are the victims of an acquired or hereditary nervous or mental disease and who commit crimes either by reason of this disease or by temptation or environment. Of course this will comprise those who are vagrants, who are ungovernable or who have criminal tendencies.

The Italian school (Ferri, Lombroso, Marro) divides criminals into (1) criminals by birth or instinct; (2) insane criminals; (3) criminals of passion; (4) occasional criminals; (5) habitual criminals. Groups 1 and 2 comprise the constitutional or born criminals, and what Lombroso calls the criminals by organic defect due to special diseases, drugs (especially alcohol), mental diseases (especially paranoia), epilepsy, degeneration, moral imbecility, idiocy, cretinism. Morrison believes that the mental defect of juvenile offenders as a class originates in a weakened physical basis, in heredity or environment, and that the physical condition of the juvenile offender is worse than that of the ordinary, law-abiding child at the same age. For him, mental anomaly shows itself in defect of intellect, feeling or volition. In itself this is a kind of reversion to the old psychological classification which pigeon-holed human thought in one or another of the above categories. I propose to show in the course of this paper that a juvenile mental disorder may exist without any concomitant physical defect, and, furthermore, that in many cases we are dealing with definite disease processes in the brain and nervous system which will easily explain everything without the necessity of calling to our aid an artificial psychology based on isolated psychic attributes, which we know never exist alone but always in combination with other factors of the complex mental life. It is principally along these lines that I differ from Morrison, hence my statement at the beginning of this paper, that I considered his chapter on the mental condition of juvenile offenders the weakest portion of an otherwise admirable and scholarly study of juvenile criminology.

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Stanley Hall, however, recognizes that in adolescent crime we confront the vast field of modern criminology, that many juvenile offenders are the victims of mental disease of hereditary types, such as the so-called moral insanity, that many are degenerate, that crimes committed without any object are usually committed by subjects of mental alienation, and that pathological lying exists among many children. In an unpublished paper on the relation of adolescence and puberty to the problem of dementia praecox, which I read before the Seminar of Clark University in February, 1905, I pointed out that petty crimes were frequently the first symptom of a katatonic deterioration, and later experience has shown that these petty offenses may occur in any of the prepuberal, puberal or adolescent neuroses and psychoses.

Oppenheim, in describing the first signs of the neuroses in childhood, shows that little children are particularly prone to phobias and their motor expression, to hallucinatory delirium, imaginative lying, disorders of sleep and many motor eccentricities. Thomas, in his paper on slightly abnormal children, comprising studies from birth to puberty, points out how cerebral neurasthenia depending on a psychopathic heredity and exhaustion may occur, as also obsessions, impulsions, tics, pathological distraction, morbid dreaming, somnambulism, imaginative romancing, fugues, hysteria, chorea and moral insanity. Trüper has given us a valuable study of feeblemindedness and other mental abnormalities as factors in juvenile crime. Emminghaus, in his monograph on mental disturbances in children, finds that two types of acute dementia, the stuporous and the agitated, are very frequent among them. Karl Wilmanns, in a study of the mental condition of 120 tramps, found that 66 of these were cases of dementia praecox (adolescent insanity). Many of the so-called prison psychoses are some phase of katatonia.

Krafft-Ebing, in discussing the menstrual psychoses, found that the cyclic type, which may take the form of maniacal excitement or of melancholia, is of considerable medico-legal importance, as the subject may entertain violent feelings against society which may lead to criminal acts, such as theft, arson and even murder. One of my patients, a young girl, at each menstrual period, went into a state of great anxiety and agitation, developed hallucinations of hearing, thought she was being poisoned, and spent much of her time in prayer. Many sexual crimes, sadism, masochism, the so-called lust murder, are committed by young adolescents who are the unfortunate victims of a pathological sexual instinct. Of

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interest are the many petty larcenies committed as the result of fetischism or fetichistic tendencies, such as the stealing of various parts of female attire, and more especially hair fetichism and the hair despoilers, of which we had recently a prominent example in Boston, who became popularly known in the newspapers as "Jack the Clipper."

Stransky reports a highly interesting case of a youth who was arrested for stealing a pair of shoes, who made no answer when questioned by the police and was therefore suspected of simulating, on examination by physicians was found to be suffering from a severe form of dementia praecox. He had no memory for the crime. The author very pertinently points out that such crimes are quite frequent in dementia praecox, and the course of the disease in the case above cited shows that any idea of simulation on the part of the patient may easily be dismissed.

Juvenile offenses and delinquencies are as numerous and varied as those committed by adult criminals, but modified by the many psychic and somatic factors of puberal and prepuberal development, particularly by the predilection of certain neuroses and psychoses to appear first or at least to become greatly accentuated at puberty, such as epilepsy, dementia praecox, moral insanity and the sexual psychopathies.

Murder may be committed by the young adolescent who is the victim of some sexual aberration, by those who have no knowledge of the power of control, through emulation or psychic contagion, or as the feature of an epileptic equivalent. It may be the outcome of the so-called moral insanity, that grave ethical defect, which is foreshadowed in childhood and bursts out to full maturity at puberty.

Below fifteen, the most frequent types of delinquency are theft, truancy, begging, malicious mischief, incorrigibility, nomadic tendencies and vagrancy. On the basis of statistics it has been computed that crimes against property are the most frequent between the ages of twelve and fifteen. The lies of children and their relation to romancing, day-dreaming and reverie, in both their pathological and normal aspects, have been studied by Oppenheim and Stanley Hall. Revenge and anger in children may be pathological and lead to serious crimes. Hall points out that all boys develop an increased propensity to fight at puberty, and therefore advocates boxing as an essential part of the physical education of adolescents, because it forms a wholesome outlet for anger. Envy and jealousy also play a prominent part in juvenile crime.

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Child torturing may be an exaggerated form of teasing or it may be a rudimentary sadistic tendency. Petty larcenies are very common, and may be due to an ignorance of what constitutes ownership and personal property, to a desire to possess something dear to the juvenile heart but beyond its material means; to sudden impulsions, or as symptomatic of some form of adolescent insanity, moral imbecility or epilepsy. Pyromania may be an irresistible obsession, a love for excitement, moral insanity or an epileptic equivalent.

Fatigue in school children is a prominent factor in cerebral neurasthenia, of what the French call *surménage*. It plays a great part in the production of the grave mental disorders of puberty. It manifests itself in restlessness, choreiform movements, tremors, exaggerated reflexes, involuntary laughter and irritability. Various fancies may take possession of the mind and degenerate into pathological obsessions.

Many questionnaire returns on peculiar children merely classify them as cruel, lying, ill-tempered, etc. While valuable for statistical purposes, terms such as these are merely symptomatic and descriptive and throw no light on the question. What we need is a complete history of the delinquent and of his crime, the family and personal history, somatic diseases and finally a complete mental and physical examination. Only with this mass of data can we draw any definite conclusions. This method will naturally give us fewer cases than do questionnaire returns when the mental condition is indicated by one or two words, but what studies carried on along these lines lack in quantity they gain in quality. Minute data only are of value for the study of individual cases. Individual study is the most promising and fruitful, for what may be normal in reaction for one delinquent may be abnormal for another, as measured by the standards of heredity, medical history, and physical examination.

A brief summary of some of the cases* will serve to elucidate the subject far better than any didactic or symptomological description. For the sake of clearness, I shall divide the cases into groups, although so far as some of the cases are concerned this classification is merely tentative.

*Some of my cases were observed at the Worcester Insane Hospital, others were examined in the Neurological Clinic of the Mt. Sinai Hospital, having been submitted for examination by Judge Baker, of the Boston Juvenile Court.

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I. *The Dementia Praecox Group.*

Here we are dealing with a deterioration disease process, which shows a varying clinical picture, presenting, however, a gradual transition to a characteristic apathetic state of terminal dementia. The following six cases are selected from my collection of 210 cases of dementia praecox, as showing in an admirable manner the relation of crime to one of the gravest forms of adolescent insanity.

Case 1. A youth of nineteen, was indicted for bastardy committed at the beginning of a katatonic deterioration. He became more apathetic and stupid, repeated many peculiar, stereotyped expressions, developed catalepsy, grimacing, echolalia, and finally went into a state of complete dementia and dilapidation, with disappearance of all the automatic symptoms.

Case 2. A case of dementia praecox, ceased school at fifteen, began to lead a vagrant's life and to associate with a gang of young pilferers.

Case 3. A case of recurrent katatonic excitement, began to show criminal tendencies at eighteen years of age, the period of the onset of the disease.

Case 4. A boy committed larceny soon after leaving grammar school and in a short time developed a severe type of hallucinatory dementia praecox.

Case 5. A boy was arrested for assault and battery at twelve years of age, and was sent to a correctional institution. There he became morose, showed a decided loss of mental ability, had periodical attacks of extreme irritability strongly suggesting an epileptic equivalent, and finally developed a typical katatonic stupor with extreme emaciation. At fifteen, recovery, with a moderate degree of dementia.

Case 6. A boy was arrested for drunkenness at sixteen. Examination at the time showed a typical dementia praecox.

II. *The Moral Imbecility Group.*

Pyromania was the prominent feature of this case, but outside of moral imbecility it may also occur as an irresistible obsession, a love for excitement or an epileptic equivalent.

Case 7. A young girl employed as a chambermaid in several hotels, where fires were accidentally discovered, finally confessed that she set the fires from an irresistible impulse, from love of

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excitement and in reaction to hallucinations of hearing, claiming that the voice of her dead father commanded her to set the fires. I was inclined to regard the latter either as a pure fabrication or as an illusion of memory. When questioned as to how she knew it was her dead father's voice, if the voice stated it was her father, she claimed to *recognize* the voice as his and not from any hallucinatory confession. However, further in the examination and in the medical history, it developed that the patient's father had died before the patient was born.

III. *The Epilepsy Group.*

In these three cases the epileptic seizures were of the masked, atypical form, and only a careful examination finally established the purely epileptic character of the disease.

Case 8. A boy of thirteen, has an epileptic mother, a father who is a chronic alcoholic, subject to outbursts of irritability and furor, and a brother who is given to pathological lying and petty thievery. The patient is a member of a bad gang at school and, like his brother, is a pathological liar. For a long period and on the average about once a month, he has had dizzy attacks associated with confusion and haziness of memory. Occasionally he wets the bed at night, and at these times will awaken in the morning with the tongue bitten and a severe headache. He was indicted for stealing some electrical apparatus, which he claims was given him by another boy, although knowing at the time that it was stolen. There is a clear memory for the larceny. The moral sense is blunted, and he is quite irritable and surly.

Case 9. A boy aged twelve. Father died of pulmonary tuberculosis; many of the father's relatives are tubercular; the mother suffers from frequent attacks of dizziness, but without loss of consciousness; a sister of the patient, now seventeen years of age, has suffered from a moral deterioration with some paranoiac traits since the establishment of puberty at fifteen. The patient himself had a head injury when young, and has since suffered from frequent fainting spells. He is brought to the Juvenile Court for truancy, says he does not care to go to school, giving as a reason the strict discipline of the schools. An examination showed frequent dizzy attacks, with twitching of lips and slight mental confusion. Occasionally he wakes up in the morning with a severe headache and appears stupid and confused the rest of the day (nocturnal epilepsy). The truancy consists of an impulse to wan-

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der aimlessly away (epileptic wandering impulse), and this always occurs after the headache or attack of dizziness. When he has one of the latter in school, there arises an irresistible wandering impulse. Occasionally in these attacks he has fallen (*petit mal*). The attacks are preceded by hallucinations of sight, red-colored horns turning rapidly round and round (visual aura). He is quite irritable.

Case 10. A boy of thirteen, has a younger sister who had probably chorea. He is stupid at school and sometimes is a truant. He is reported because of an irresistible impulse to sleep—will sleep anywhere in school. Once he fell down stairs. These sleepy attacks are followed by headache, a dazed condition and extreme irritability and pugnaciousness. For eight years he has been subject to dizzy attacks, with some twitching, loss of consciousness, and amnesia; sometimes in place of these there are sleepy attacks. In this case we are dealing with a grave type of epilepsy, *grand* and *petit mal* and narcoleptic equivalents.

IV. *The Simple Delinquent Group.*

This group is of the usual class of juvenile offenders.

Case 11. A boy fourteen years of age. The father and mother are dull, the latter being prone to lying; a brother is feeble-minded and has the appearance of a degenerate imbecile. A younger sister has a severe brain disease (polioencephalitis). The patient is bright at school, but misbehaves unless closely watched. He is prone to play with very young children in the streets, whom he likes to dominate and bully. He stole a large number of lead pencils from a store and led another boy into the same trouble. Questioned concerning his offense, at first he states that he intended to buy a pencil for school, then helped himself to a box, but later asserts that another boy stole the box of pencils and gave it to him. No irresistible impulses. He thought at the time that there was nothing wrong in accepting stolen pencils, but thinks differently now. The head is slightly asymetrical, the ears large, the Darwin tubercle prominent, palate high and narrow, with a longitudinal torus.

Case 12. A boy, aged twelve, stole a box of cigars. Was a member of a gang, who he states stole the cigars, but denies any larceny himself. Knows it is wrong to steal. Smokes cigarettes. Slight internal squint of left eye.

Case 13. A boy, aged twelve, in company with another boy,

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entered a house and stole a watch and twelve dollars in money. Arrested for "bunking out". He has been a truant several times, smokes cigarettes, reads dime novels and attends cheap variety shows. He says he stole because he needed the money and saw no other means of obtaining it. Knows he has committed a crime. There are no degenerative physical stigmata.

Case 14. A boy, aged fourteen, has had frequent nose-bleeds, and an examination shows the presence of adenoids. He smokes cigarettes and reads dime novels. In company with a gang of boys he stole some cigars from a store. The patient knows it is wrong to steal and is penitent. No degenerative stigmata.

Case 15. A boy of seven, whose father died of tuberculosis, and whose mother is said to be tubercular, for some time has been a persistent truant, attending school only two or three days a week. He is fairly bright, however, and stands well in his studies. There is no mental defect or evidence of epilepsy, the ears are small and have attached lobules, the palate high and narrow. He states that he is tempted by other boys to play truant; usually plays in the street; likes school, and would attend regularly but cannot resist temptation. He has no realization of his offense.

V. *The Imbecility Group.*

Case 16. A boy of sixteen, was a frequent truant at school, and therefore was sent to a corrective institution, where he remained for nine months. At home he would sleep until almost noon; at school he was dull and lazy, and although in one of the lowest grades, yet he was far below the average of his class. Examination showed the head to be small and asymmetrical, the forehead narrow, ears of irregular size, and unequal pupils. He is unable to perform simple problems in arithmetic or to tell the significance of national holidays.

Case 17. A boy of fourteen. The father is sickly, the mother dull and given to ridiculous lying. The patient was arrested for loitering. Mentally he is a pathological liar, is defective and quite stupid in manner. He is in one of the lowest grades in school. No degenerative stigmata, excepting a rather low and broad palate.

Case 18. A boy nine years of age. A brother of the patient in Case 11. He has the appearance of a degenerate imbecile, the speech is thick, the head small and bullet-shaped, the forehead narrow, the ears prominent, the palate low and the palpebral

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fissures very narrow, giving him a Mongolian appearance. It is stated that he stole some whiskey. The entire attitude is unintelligent and clownish, and he frequently laughs in a silly manner.

VI. *The Acquired Delinquency Group.*

This title was adopted for want of a better descriptive term, although the patient classified under this heading seems fundamentally to have been morally defective, yet many features of her condition strongly suggest an incipient paranoiac type of dementia praecox. The case is interesting as showing the value of the association tests as devised by Jung, and how a purely psychological conception may be practically utilized for the determination of concealed facts in criminology. When in the midst of the ordinary test words, there are utilized special words pointing to the trend of suspicion, there is immediately a refusal to cooperate, or if an association word is given, there results a marked lengthening of the reaction time (taken with a stop watch to one-fifth of a second). For lack of space, only the most striking associations will be given in the history of the case.

Case 19. The patient is a well-developed girl, seventeen years of age, whose younger brother is the epileptic described in Case 9. The complaint lodged against her was stubbornness. At ten years of age she was delirious for a time, but recovered completely, although there is an obscure history of some "brain trouble." Shortly after puberty, which was established at fifteen, the patient began to show a moral deterioration, associated with evil companions, once ran away with a vaudeville company. She has worked in a number of places, being able to retain a position only a short time. At home she is cross and stubborn, and will frequently remain out until midnight. Occasionally she has outbursts of temper, will strike people and break objects, is very suspicious. Recently there has been a suspicion of sexual irregularities, which the patient absolutely denies. There are no physical degenerative stigmata. The patient is bright and alert, but emotional. She denies all disorderly conduct, but there appears to be a lack of sincerity in her replies. She states that she is maltreated at home, that her mother has hired a detective to follow her about, that once he spoke to her as she was entering a street car. No real hallucinations elicited. Explains her inability to hold positions on the ground that her mother sends people to trouble her while at work. The neighbors confirm the mother's

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statement of the bad conduct of the girl, and on account of her manifest untruth and lack of sincerity it was determined to try the association tests, in order to get at the hidden facts of the case. Only a few are given (the normal and abnormal for comparison):

Test Word	Association Word	Reaction Time	Remarks
1. Dark	"Night"	1 second	
2. Hard	"Not bent"	3 seconds	
3. Drink	"Water"	1 second	
4. Bad	"Unconscious"	4 seconds	
5. Lie	"Hasty"	9⅘ "	Lengthened Time
6. Street	"Walking"	6⅘ "	" "
7. Untruth	"Spoken in haste"	9⅘ "	" "
8. Deceit	"To speak against"	14⅘ "	" "
9. Vaudeville	"Gayety"	13⅘ "	" "
10. Conduct	"Don't know"	16⅘ "	Refused to cooperate
11. Sweet	"Candy"	1⅘ "	

The lengthened reaction time on the special test words 5, 6, 7, 8, 9, and the refusal to cooperate on test word 10, pointed strongly to concealed facts, and when the patient was directly accused of these matters she broke down and confessed that she had been telling an untruth.

VII. *Post-Traumatic Irritability Group.*

Case 20. A boy of seven, always well until struck on the head by a cobblestone two years ago. No fracture of the skull, but there was a severe scalp wound, which bled profusely. He was not unconscious at the time. Since the injury there have been frequent outbursts of irritability without amnesia. There is no intellectual defect, but in school he is very mischievous, plays truant, and draws peculiar pictures. No evidence of epilepsy and no degenerative stigmata.

VIII. *Organic Dementia Group.*

Case 21. A boy, aged thirteen, was brought to the Juvenile Court for the larceny of fifteen ounces of chocolates from a penny-in-the-slot machine. He is also suspected of having stolen a boat some time previously, but for this there is no direct evidence. In school he is stupid, vicious and delights in sticking pins into other boys. The mother of the patient is stated to be quite dull.

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Four years ago he had a left otorrhea followed by a facial paralysis. Since then he has been dull and rather backward in his studies, is drowsy a great deal of the time, and is awakened only with great difficulty. The boy seems defective, has a curious, stolid expression, a thick, protruding under lip. He denies torturing boys, stealing chocolates, or the boat episode. Claims that his parents appropriate his savings. There are frequent dizzy spells and headaches. There is a peripheral left facial paralysis, the hearing is diminished on the left, the right facial muscles frequently twitch. It is futhermore stated that his attacks of prolonged sleep frequently last for four days at a time. In this case we are undoubtedly dealing with an organic brain disease, probably a brain abscess (temporo-sphenoidal lobe), following a middle ear disease, the latter also causing the facial paralysis.

To summarize briefly, we can state that so far as our clinical experience is concerned, many juvenile offenders suffer from severe forms of nervous or mental disease. In many of these, crime is one of the first symptoms of a grave psychic disorder, which usually terminates in dementia. In others, the delinquency is merely one of the features of a masked type of epilepsy. Some of these patients belong to the simple delinquent group, are the victims of a bad heredity and show many somatic symptoms of a so-called degeneracy, apart from any mental or moral defect. In others again there is a severe developmental or congenital disorder, either in the intellectual or ethical spheres, in the one case leading to conditions of simple imbecility or idiocy, in others, to the so-called moral insanity. Finally, there are the accidental delinquents, the result of severe head injuries or of grave types of organic brain disease. From the material here presented, it becomes evident in the light of the rapid development of our juvenile courts, that all young offenders in whom there is any suspicion of a nervous or mental disorder or any signs of degeneracy, should be subjected to an expert medical examination by an alienist or neurologist. It is only in this manner that one of the great factors in the production of juvenile crime, from both the medical and sociological standpoints, can be satisfactorily determined.

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THE HOSPITAL SCHOOL.

By Lightner Witmer.

In an article on clinical psychology in the first number of this journal, I described the beginnings of the psychological clinic at the University of Pennsylvania in the year 1896 and the general character of the work during the subsequent ten years.

During the past year, the demand upon the resources of the clinic for the mental examination and educational treatment of children has greatly increased. Last summer I organized a daily clinic at which I saw, from the first of July to the middle of August, an average of from three to four new cases a day. These children were given a psychological examination by me and a neurological examination by Dr. S. D. N. Ludlum. Mr. Stevenson Smith, a former student of the psychological department of the University of Pennsylvania, and now professor of psychology at the Hampden-Sidney College, took charge of the examination and treatment of speech defects, especially stuttering. In the psychological examination of such children as were brought to the clinic, I was assisted by Mr. Edward H. Huntington, principal of special school No. 3, who is one of the first members of the teaching profession of Philadelphia to devote himself to the scientific study of these cases and to the removal of such physical defects as are found to interfere with school progress. I was also assisted by Mr. J. D. McCallie, a supervising principal in Trenton, N. J., who has given much time during the last year to the study of defects of vision and audition in school children, and who has devised a clinical audiometer that promises to be of service in examining rapidly the hearing capacity of large numbers of children. Another assistant in this examination was Mr. J. D. Heilman, a student of psychology and pedagogy at the University, who is engaged on a special investigation of the causes of retardation in school progress.

In many cases it is impossible to make a satisfactory diagnosis of the mental status of a child after seeing him once or indeed after several visits. The child's capacities and failings only become apparent after an attempt is made to teach him something beyond his known acquirements. For this reason no psychologist would risk, in many cases, a statement of the child's mental

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status with suggestions for treatment, nor would he risk a prognosis, unless he is able to place the child for observation and instruction in the hands of one or more competent teachers. For many years I have had in mind the establishment of a training school in the nature of a hospital school for the temporary treatment of all classes of children suffering from retardation or physical defects which interfere with their school progress. Such a training school, if properly conducted, is an expensive experiment, but it is an experiment which must be made if we are to understand these children, classify them, and prescribe efficient methods of treatment. The hospital school must provide a home for the children where food, baths, sleep, massage, open-air life and physical training may be adequately supervised. The best of medical care must also be supplied, not only for the examination and treatment of eyes, ears and naso-pharyngeal obstruction, but also for intestinal disorders, malnutrition, etc., which in some cases seriously interfere with a child's mental progress. The school must be provided, therefore, with one or more trained nurses. There must be one or more teachers especially fitted for the training of young children and interested in helping children of deficient capacity.

The hospital school, or experimental training school, has not only its *raison d'être* as an independent institution; it is a necessity for diagnosis and prognosis. In many cases, I desire to keep children under training for several days, in some cases a month, in others six months, and in a few cases, perhaps a year, before the child is classified and before it can be determined just where the child had best be sent, and what methods of instruction are best adapted for its individual treatment. Since the establishment of the hospital school in July of this year, I have found it extremely serviceable in doubtful cases in making my diagnoses. Several cases taken into the training school for purposes of diagnosis during the summer were still doubtful cases after two or three weeks of examination. The work of the psychologist differentiates itself from that of the neurologist in this respect. It is true that in many branches of medicine to-day a diagnosis is avoided, especially in chronic cases, until after the patient has been kept for some time under observation. This is absolutely essential in most cases of retardation. The more carefully I study these cases, the more surprises I encounter, not only in uncovering unrecognized deficiencies and hindrances to normal progress, but also in discovering unsuspected capacities.

Through the liberality of Mrs. J. Lewis Crozer, the Univer-

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sity of Pennsylvania was provided with a fund which enabled the department of psychology to make the experiment in establishing a hospital school. I obtained a house in West Philadelphia near the University where I was able to board ten children and two trained nurses. The chief nurse whom I employed for this work was Miss Anna L. Stanley, who obtained leave of absence for the purpose from the Visiting Nurse Society, and who had been employed by that society during the past winter as a school nurse. Miss Stanley shows unusual devotion to this kind of work, and if the school nurse becomes an accepted institution in the Philadelphia schools it will be largely owing to her pioneer work and to the support given the work by the Visiting Nurse Society.

The nurses brought the children to school every morning, supervised their daily life when not in school, their diet, their sleep, gave baths and massage, and carried out such medical treatment as was prescribed by the physicians in attendance. The hospital school enjoyed the assistance of a number of physicians, to whose clinics children needing the services of a specialist were taken by a nurse. For the general medical care of the children, the school was indebted to Dr. Alfred Stengel, who has taken a great interest in the work and was kind enough to put at the disposal of the school the facilities of the Pepper Clinical Laboratory, where examinations of urine, blood, etc., were made. In the afternoons those children who were not needed for special work, or were not to be sent to a clinic for special treatment, were taken to Fairmount Park, where they were taught to play and were able to enjoy the open air.

Every morning from 9 to 12 the children spent at school. During the six weeks of the summer session the school was held in the College Hall of the University, where three rooms were set aside for the purpose. Miss Town had charge of the regular school work, in which she was assisted from time to time by several teachers of Philadelphia and other schools, who were students of psychology at the summer school of the University. Children suffering from speech defects and children who show easy distraction of attention must, in the beginning at least, be treated individually for part of the time. This work with individuals or small groups, these student assistants are quite able to carry out satisfactorily under direction, and thus the instructor was able to devote her efforts to the more difficult cases. Miss Edith Boughton, a sloyd teacher in one of the special schools of Philadelphia, had

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charge of the sloyd room, where children were given work with carpenters' tools, raphia and other light manual work, and gymnastic exercises. This is an extremely important department of an experimental training school. One would undoubtedly obtain a false impression of the capacities of many children, if they were seen only in intellectual work. Children who are totally indifferent, uninterested, and apparently without sufficient visual memory, attention or mental energy, to learn to read and cipher, become keenly interested, develop considerable effort, and improve mentally when given manual work.

Important as it may be, to advance such children as are backward, and appear to be subnormal, to a stage of intellectual development where they become capable of making normal progress, and to improve the condition of such children as are trainable only within circumscribed limits, still the chief benefit that will accrue to society from this kind of work will come from the scientific results that are obtained from the study of these children. In all work of this kind it is, therefore, the first consideration to see that the work is done under such conditions that the results are permanently recorded and the records published.

For this reason, I have felt that if the work is to be established on a satisfactory basis, some such journal as THE PSYCHOLOGICAL CLINIC should be brought into existence, where the results of the work may be presented and discussed for the benefit of those directly interested—physicians, teachers, social workers, and parents. The development of the work also requires that competent persons shall be trained to observe and work with these children. I consider the efficient teaching of the methods and results of clinical phychology as important as the actual prosecution of the work. During the summer session of the University of Pennsylvania, the psychological department offered lecture and laboratory courses, furnishing a foundation for this work in the science of psychology. In addition, a psychological clinic was given daily, where children were shown to the students, their deficiencies and capacities demonstrated, the causes and methods of treatment commented upon. This method of instruction in psychology, which I introduced at first with some misgivings, has proved very helpful to my students, and I now feel that the psychological clinic is as important a department of practical work in psychology as is the regular laboratory instruction.

About the middle of August the summer session closed, and the work of the training school at the University of Pennsylvania

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ceased. Most of the children were sent to their homes, but a small group of four children (later five) were sent to Dr. Ludlum's house in Merion, where they were placed in his care and under the direct training of Miss Rose Tierney, a teacher of thirteen years' standing, who has had the training of a nurse in mental cases. On the first of October the children were installed under the care of Miss Tierney in the house in West Philadelphia, where the training school will be continued as long as the department of psychology is able to obtain the funds to carry on the work.

From the cases that came under our care and training in the hospital school, I select that of a girl of Russian Jewish parentage, eight years of age, whose history will serve to illustrate in an admirable fashion the co-operation that is coming to exist between school authorities and various special agencies for the amelioration of the condition of many school children. This child had been for two years in the first grade of a Philadelphia school and had made in that time so little progress that there was no possibility of promoting her to the next grade at the end of the school year. She was brought to the psychological clinic by Miss Stanley, a school nurse whose work was supported by a private organization, the Visiting Nurse Society of Philadelphia, in the hope of stimulating the city to undertake this most important work on behalf of children. The medical instructor for the district, Dr. Newmayer, had also taken an interest in her and had consulted me concerning her physical and mental condition.

When I first examined her she appeared to be a child who took very little interest in her surroundings. She was poorly nourished, dull and sullen, unwilling or unable to answer simple questions. I soon discovered that she was deaf and that this was one cause of her retardation. The tonsils were much enlarged, adenoids were suspected; the eyesight was defective; she had strabismus. I recommended that she be taken to Dr. Packard's clinic at the Polyclinic Hospital to be examined for naso-pharyngeal obstruction and operated upon if this appeared necessary. Dr. Newmayer refracted her eyes and prescribed glasses, which she has since worn. Dr. Packard operated upon her for adenoids and enlarged tonsils.

The child had been brought to my psychological clinic for the first time on March 23d. On May 4th I saw her again. Her adenoids and tonsils had been removed about two weeks previous. The child already showed a marvelous improvement in appearance. Her skin was in much better condition and she appeared stronger,

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Her expression had improved likewise; the mouth was still open as it had been before, but she looked more alert and took greater interest in her surroundings. Miss Stanley, it seems, had been advising the family as to proper diet, in consequence of which she had been given more nourishing food.

The examination showed that she was very deaf both for words and sounds, but especially for spoken language. We found in her case, as in that of most children suffering from deafness due to adenoids, that it was difficult to ascertain the degree of deafness, owing to her inability to give attention. She was wearing the glasses that had been prescribed; her eyes were still somewhat crossed.

May 29th she appeared at the psychological clinic looking mentally much brighter and physically improved. Examination showed her hearing to be about one-fourth what normal hearing should be. Her speech had much improved. Her teacher reported that she was now able to understand almost everything that the child said, whereas, before the tonsils and adenoids had been removed, it was quite impossible to understand her on certain days. Examination showed that she was able to write a few words, but she had made very little progress in mastering the work of the first grade.

I determined that she was a satisfactory case for the hospital school. She was under special care and training for six weeks in the hospital school on Walnut Street, and subsequently was sent to Merion, whence she returned to the Walnut Street house about the first of October.

Good food and air alone would have accomplished a great deal for this child. She is one of seven children living with their parents in an alley, in two small rooms about 9 x 14. The living room, which has one window, contains a table, a few chairs, a stove and lounge, no carpet, dirty clothes piled in one corner, many flies and a barking dog. The table is covered with a piece of black oilcloth on which there are usually to be found pieces of brown bread and glasses of tea. The family never sit down to table; no meals are prepared. Their diet consists chiefly of bread and tea and sometimes fish. Bread is always on the table and the children take it up when they feel like eating. The front of the house looks out on a board fence which divides a double alley; in the rear is a small brick yard; one hydrant at the entrance suffices for the different families; there is underground drainage, but an offensive odor comes from the water closets.

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Although removal to a more favorable environment, good food and medical treatment, even without mental training, would have made some improvement in this child's physical and mental condition, she showed mental characteristics which at the start made it difficult for her to progress. She was not only deaf and subject to a speech defect,—both the direct result of adenoids,—but she manifested also inefficient attention and appeared to be subject to fits of sullenness, both of which may have been directly due to the adenoids, but were probably also causally related to insufficient nourishment, bad air, and poor home training. The fits of sullenness were of special interest. They came on frequently and even now she is subject to them, although she is greatly improved in this respect. It is somewhat difficult to distinguish between inability to give attention, sullenness, deafness, and a temperamental shyness. She often refuses to answer a question which she will sometimes answer readily and intelligently if the question is repeated in a louder tone of voice. At other times she refuses to answer even though it is thus repeated, unless the question is put to her by her teacher or some one with whom she is quite familiar. At other times she will even refuse to answer the trainer. In the school room during the summer work, Miss Town found that in the first minutes of the school session it was often quite impossible to obtain the child's attention or co-operation in any school work. If the child were let alone for from fifteen minutes to half an hour, she appeared to become ready to take up her co-operation in the work of the class. If Miss Town insisted on her taking part in the class work at the beginning of the day, the child refused, and the time of her ultimate submission to school work would be more or less postponed. This peculiarity alone would have made her a difficult case to handle in the ordinary first grade of a public school. She was, therefore, pre-eminently a child for special work. Toward the end of the first six weeks, under our care, she began to take more interest in her work, and would often begin the work of the day without the preliminary period of mental dulness.

Miss Town reports on her six weeks' work with the child as follows:

"F. is the natural result of the combined poverty and ignorance of her parents. Her impoverished physical condition, the result of improper nourishment, led to a sluggish mental development. The parents had no understanding of her condition, or the means of alleviating it, even if they had known what to do for her.

"Her faults lay chiefly in the emotional field. She was sluggish

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and difficult to interest and approach. She appeared obstinate, but the obstinacy I judged was not so much a wilful one, which could be met by strict discipline, as an uncontrollable psychic state, a temporary clouding of the consciousness, which it was best to ignore. When so treated, she would gradually brighten up and be ready to receive instruction quite easily. She did not evince rapid fatigue. Her dullest period was the first of the day, before her interest was aroused.

"The strabismus almost disappeared while her attention was centered on an object. The deafness also varied in degree with her attention. The difficulty in articulation is partially due to the labored breathing, resulting from adenoids, and partly to her difficulty in hearing. Not hearing sounds clearly, it is impossible to reproduce them correctly. She is capable of repeating most of the sounds that she really hears, though her mouth breathing has resulted in a habitual slurring of many sounds. She has a good visual memory and very readily learns words as symbols of objects.

"In reality F. was bewildered for some time after she came to us, by the absolute change in her environment. She passed through a period of gradual unfolding of her emotional nature. She did not seem to understand affection, and when another little girl, who was homesick and needed a petting, grew demonstrative, she sat and laughed in surprise and absolute lack of understanding. She learned, however, and before the term of six weeks was over she had grown demonstratively affectionate herself.

"In conclusion, Fanny's chief faults were a general slowness and lack of ambition, and a defect of articulation. The educational methods used were, first, an effort to win the child's good will and interest, and, secondly, to make her hear clearly every sound combination she was required to pronounce."

During the six weeks at Merion, under Miss Tierney's instruction and Dr. Ludlum's medical care, the child made more rapid improvement. The adenoids, which had been removed early in the spring, again developed, and the child was operated upon in the early part of July and again in August. The association of mental dulness with adenoids was easily traced in her case. In the latter part of August the child became extremely dull and heavy mentally; her breathing showed increased obstruction, the mouth was again held widely open. These unfavorable conditions were all removed through an operation. The obstructed breathing did not disappear more quickly than the obstructed intellectual processes. The operation made her again a fairly bright child.

By the first of October I felt convinced that the child was capable of making normal progress in the first grade of a public school. I am not convinced, however, that the child is free from

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some permanent reduction in mental capacity. She has a permanent reduction in hearing, due to the adenoids, and she may have a similar reduction in mental capacity due to the same cause. I am inclined to the belief that she is a normally bright child, and that if she is kept in a healthful environment and properly instructed, she will grow into the average young woman with no other handicap than a considerable degree of deafness. Even the deafness will diminish as her powers of attention and her capacity to apprehend language increase. Lessons in articulation will improve her hearing, as well as lessons in training the attention. If she should be returned to her home at the present time, and placed in the ordinary first grade, she will have to contend against her deafness and also against the depressing home environment and its insufficient support. I cannot regard my experiment as completed at the present time. I have therefore determined to keep her under observation in my hospital school for at least another period of six months. We can control her diet, give her adequate medical care, watch for a possible recurrence of adenoids, see that nose breathing is firmly established, train her in articulation, improve her voice, and assist her in her school work. To determine whether such a child can maintain herself in an ordinary class in the public schools, I have entered her in the first grade of a neighboring school, where she will be taught with other children. It is our hope that we shall enable her to complete the work of the first two grades in one year. If we succeed in accomplishing this result, the problem will then confront us as to what ultimate disposition is to be made of her case. But the problem will then have become a social problem, as medical care and psychological training will have done their full work in restoring her to health and normal mentality. She will be discharged from the hospital school *cured*. But will society see to it that she does not again become the victim of her environment?

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REVIEWS AND CRITICISM.

The Psychology of Mentally Deficient Children. By Naomi Norsworthy, Ph.D., Instructor in Educational Psychology, Teachers' College, Columbia University. Archives of Psychology, No. 1. November, 1906.

In *The Psychology of Mentally Deficient Children,* Dr. Norsworthy has endeavored to solve three problems in relation to the mentally deficient: "(1) Whether the mental defects of idiots are equalled by the bodily; (2) whether idiots form a separate species or not; and (3) whether the entire mental growth is retarded,—that is, whether there is a lack of mental capacity all around."

The method used is the experimental one. A series of physical and mental tests were made upon 157 "school cases" in the School for the Feeble-minded at Waverly, Mass., in the Institution for the Feeble-minded at Lakeville, Conn., and in the classes for defectives in one of the New York public schools, and a comparative study is undertaken of the results of these tests and of similar tests made upon several hundred normal children.

The main section of the monograph is devoted to the presentation of the results of these experiments. It is preceded by a sketch of the development of educational work with defectives, a chapter on definition and classification of idiocy, and a summary of previous experimental work. It is followed by a statement of conclusions and remarks on the application of the results to the subject matter and methods used in the education of defectives.

From so extensive a study and so imposing a display of tables we hoped to glean much valuable information, and were therefore greatly disappointed to find inaccuracy of historical statement, an incomplete resumé of experimental work, conclusions quite unjustified by the data, and most impractical suggestions as to education. Thus, in recording the beginnings of work with feeble-minded children in this country Dr. Norsworthy fails to give due recognition to Dr. Wilbur's experimental school for feeble-minded children at Barre, Mass., as the first school of the kind in this country, antedating by some months the one established by grant of the state legislature of Massachusetts. In taking up the newer aspect of the problem of caring for mentally defective children, *i. e.,* that which is found in association with the education of normal children, Dr. Norsworthy states, "a further step in advance has been made in this field since 1899. For years the public schools have been hampered by what we have called 'defective children' . . . In London in 1899 . . . a committee was appointed to investigate the conditions as existing at that time in the schools . . . Acting upon the report of the committee the London School Board established

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special classes in connection with schools in various parts of the city. . . . Philadelphia, Providence, Boston, and in 1903 New York City also have followed the example set by London and provided for children needing special and unique instruction in the public school system."

As a matter of fact, the London movement, which really dates back to 1892, was by no means the first of its kind. The Germans were the first to discover the existence of a large class of school children of a higher mental grade than that of the imbecile, who nevertheless required special instruction in the schools. This priority was doubtless due to the fact that Germany took the lead in the enforcement of compulsory education. Children who would ordinarily have drifted away from the schools and therefore from the view of educators, were forced by the compulsory education law to attend regularly, and in the course of time great numbers of them remained year after year in the elementary classes, making no perceptible progress. In 1863 Ernest Stotzer, a teacher of Leipzig, energetically urged the establishment of special classes for their instruction. In the same year in Halle, a school was opened for retarded children, but this was designed principally for those retarded from other causes than mental defectiveness, although the mentally defective child also was admitted. The first school designed particularly for defectives was established in Dresden in 1867. Other cities followed the lead of Dresden in establishing *Hilfsklassen* and *Hilfsschulen für schwachbegabte Kinder*. By 1892 they had been established in eighteen cities of Germany; the dawn of the new century found them in ninety-eight cities. The movement spread from Germany to Norway in 1874, to Austria and Switzerland in 1892, to Holland in 1896, and to Belgium in 1897; thus special classes and schools were well established throughout Teutonic Europe before the year 1899, which is signalized by Dr. Norsworthy as the year of a "step in advance" in the treatment of defective children.

Even in Great Britain the movement was inaugurated before this year. The enforcement of the compulsory education laws in 1881 was followed by the opening of the first school for defective children in Leicester in the spring of 1892, and later in the same year three were established in London through the efforts of General Moberly, of the London School Board.

Dr. Norsworthy fails to recognize the fact that the American movement was as independent of the English as was the English of the German. The idea of special classes for defective children in the public schools was first introduced to American teachers by Professor August Schenck, of Detroit, in 1878, in a talk before the American Teachers' Association. Acting on this suggestion Dr. Andrew Rickoff, Superintendent of Schools of Cleveland, established two schools in that city, which, however, took care only of the morally deficient. The second American class was established in Chicago in 1892. This is still in existence and in charge of the original teacher. New York established

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a special class in 1895 under the direction of Miss Elizabeth Farrell. Providence was the fourth American city to establish a special class for mentally deficient children; this was in the year 1896, although several years previously special classes for truants had been inaugurated following the abolition of corporal punishment and the strict enforcement of the truancy laws. A special class was organized in Portland, Maine, in 1896, and the first of seventeen classes for backward children was established in Philadelphia in the year 1899.

Striking as is the incompleteness of Dr. Norsworthy's history, her summary of previous experimental work presents more glaring omissions. Thus, Binet and Simon report a long series of experiments in L'Année Psychologique, 1905, Vol. XI, pp. 63-336, which are entirely overlooked, as is also the well-known experimental work of Ranschburg, of Demoor and Daniels, and of many others.*

Dr. Norsworthy's use of the term *idiot* to designate any and all grades of mental deficiency is apt to cause confusion in the minds of her readers. The term *idiot* is usually limited to the lower grades of the mentally deficient. Dr. Kerlin, whose classification of the mentally defective is based upon educability, classes idiots as "those whose intelligence is so slight as to be subject for habit training only in life-long asylum care." Dr. Barr, whose classification is also conceived from the standpoint of the trainer, describes idiocy as the lowest form of mental defect, and the idiot as untrainable. As the children used for subjects by Dr. Norsworthy were all "school cases," they were admittedly trainable and therefore not idiots. Moreover, the tests were such as to call for considerably more mental ability than an untrainable child could possibly possess. Nevertheless the results obtained by experimenting on these children, none of whom was an idiot and many of whom were even above the grade of imbecile (the special school cases) leads the author to the following conclusions about *idiots:* "(1) The mental defects among idiots are by no means equalled by the bodily, in fact in measurements of height and weight the defectives are indistinguishable from ordinary children; (2) In general, at least as far as intelligence is concerned, idiots do not form a separate species, but

*Ranschburg. *Recherches comparatives chez des enfants d'école normaux et faibles d'esprit.* Die Kinderfehler, 1905. Reviewed in L'Année Psychologique, 1906, Vol. XII, pp. 518-522.

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simply occupy a position at the extreme of some large distribution, probably approximately that expressed by the normal probability curve; (3) Among idiots there is an equal lack of mental capacity in all directions: there is something of the same lack of correlation among the traits measured in the case of idiots as there is with ordinary people."

In criticising these conclusions we must bear in mind that *idiot* as used by the author applies to imbeciles and still higher grades of the mentally defective.

That "mental defects of idiots are not equalled by the bodily," may be the opinion of Dr. Norsworthy, but to designate it as a conclusion from the data presented is an unwarrantable employment of experimental results in the service of generalization. As representative of bodily conditions Dr. Norsworthy limits herself to height, weight, pulse rate and temperature. Those who know the imbecile would like to ask the author whether asymmetry of bodily parts, spinal curvature, abnormalities of limbs, features and sense organs, are not defects of body. Dr. Norsworthy herself states that some of the children examined were paralytic and had not full control of their hands, and that others had very poor eyesight (see page 53). Such afflictions are as surely defects as unusually light weight or short stature. The determination of appropriate tests to measure certain conditions, and the determination of just what conditions are measured by each test, are among the most difficult tasks of the experimentalist. Here the problem does not seem even to be recognized, so meagre are the data brought forward to represent this complex condition.

The second conclusion, that idiots do not form a special class or species,—that there is no distinct line of demarcation between normal children and idiots; and the third, that there is not among idiots an equal lack of mental capacity along all lines, are supported by the results of the tests, but Dr. Norsworthy's investigation could scarcely suffice to establish these conclusions as novel propositions.

"About a year after these tests were made they were repeated for some of both the defective and the ordinary children, in order to see what changes and what degree of change had taken place in each class, and how far these changes were comparable." Dr. Norsworthy's interpretations of the results obtained from this latter investigation are startling. They would almost lead one to believe that there is some slight advantage in being an idiot. The results show that fifty per cent of the defectives improved, while only forty-three per cent of the normal did so; that in one-half of the tests the defectives improved more than the normal, while with the other half the reverse was true; further, that in only two tests did the defectives fail of any improvement, while the normal failed in three tests; and that the further removed the defective was from the normal the greater was his improvement. She further compares year for year the increase in ability of the defectives with the increase in ability of normal children of the same age. These

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results were overwhelmingly in favor of the defectives, the total improvement mark of the defectives exclusive of height and weight being 24.1, and that of ordinary children being 8.7. From these figures the conclusions are drawn: "(1) That among mental defectives a decided improvement in mental ability may be looked for after the lapse of a year, in some directions even exceeding that shown by ordinary school children; (2) That the greatest improvement is not confined to those defectives most like ordinary individuals; (3) That the improvement is not equal in all directions, but that some mental functions improve more rapidly and to a greater extent than others, and that even the functions we designate as intellectual show marked improvement."

Such results, one would think, would have been sufficient to lead Dr. Norsworthy to look for some flaw in her method. On the contrary, she accepts them unquestionably, states that "they show definitely that the feeble-minded do improve from year to year and that the improvement is no mean one," and confidently proceeds to build educational theories upon these results. To those familiar with feeble-minded children, the defect in the method is conspicuous. The ability of the feeble-minded child to comply with the requirements of a test on one day is no surety that he will be able to do so on another day. One of the greatest difficulties in the training of these children is the lack of uniformity of mental power. Dr. Norsworthy might have found just as great improvement in ability had she taken her second series of tests after an interval of one day as after the interval of one year. Moreover, no attempt was made to ascertain and eliminate the effect of practice either with the so-called idiots or with the normal children.

The false conclusions that Dr. Norsworthy has drawn from her figures lead her to make most startling suggestions as to subject matter and method of education. She states that the psychological methods of educating the feeble-minded have been based upon the opinion "that the poorly nourished body is a draw-back to a certain extent to mental growth and development," and draws the conclusions that as idiots "are about as ordinary children in their bodily development" as is indicated by her results, there is not so much need for this kind of treatment as is supposed. She further states that the same facts of bodily condition do away with the need for gymnastics as a spur to mental activity; also that the argument "that the physical method not only develops the body but also increases the motor control and co-ordination of the muscles and so develops the mental control" loses its importance "*if the lack of muscular control is not so much a matter of muscles as it is a matter of mind,* for if the benefit on the mental side from these exercises is gained because of the promptness and exactitude demanded in all class gymnastic work, and is not a matter of muscular development and co-ordination, then it may be that the mental development could come just as well through some other means." Dr. Norsworthy seems to lose sight entirely of the psycho-

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logical character of muscular control. Control is a psychic function, not a bodily condition, and muscular control is only gradually built up through a rich and varied experience of bodily movements associated with some achieved result. Only in this way can the fundamental kinæsthetic sensations be realized, and only in this way can the complex associated movements become habitual. Thus through active movement the bodily power and the mental control develop simultaneously. This, it seems to the reviewer, is nearer the meaning of psychological education. It is not simply that vigorous health increases mental activity, but that without certain physical development there is a corresponding lack of mental development; the two are inseparably associated.

From the conclusion that there is no distinct line of demarcation between the idiot and the ordinary child, Dr. Norsworthy deduces the opinion that the education of the idiot should conform to the present methods of education for the ordinary child. "Certain it is," she says, "that the idiot is more easily reached by such training [physiological method], but whether it is better for him in the long run, and whether it is impossible to reach him in the same way that we do ordinary children, is not fully decided. It is probable that could the idiot once be taught to write and read, he might gain more and progress more quickly than he does by the present methods of education." The objection to giving the idiot more of the intellectual training, our author thinks, is the practical one that as idiots can never become "leaders of men," they can be made of more practical use by manual training, trades, etc. It is very evident that Dr. Norsworthy has had little real experience with idiots.

The statement in the final paragraph that "we must criticize the methods of educating idiots from the same standpoint, and use the same arguments, either for or against, that we do in criticizing the methods and curricula used in the general education of the masses," would be better if inverted and stated as follows: We must criticize the methods used in the education of the masses from the same standpoint and use the same arguments that we do in criticizing the methods used in the education of the feeble-minded. Expressed in this way it conveys the real lesson for pedagogy contained in the conclusion that defectives are not a species distinct and separate. It is in educating the feeble-minded that the true psychological methods of education reveal themselves. Dr. Norsworthy seems to recognize this in the final sentence of her monograph,—"What, in education," she says, "is not good for the idiot is probably not good for also ten per cent of school children at large."

Turning from the conclusions to the tests and results, we are attracted by the admirable clearness with which the results are presented both in tabulated and graphic form. This can be attained only by an expenditure of time and mental effort that too many investigators neglect to make, and Dr. Norsworthy deserves great praise for the

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consideration she has shown her readers and the skill she has displayed in meeting this requirement of scientific exposition. The method of comparing the results of tests upon an individual feeble-minded child with those obtained with normal children is suggestive and worthy of further trial. It is uncertain, however, whether the mathematical treatment will stand criticism from the theoretical side. It is a pity that a larger number of children were not observed. Many of the tests employed are open to criticism on the score of being very complicated for the ability of the feeble-minded child. Asking for the opposite of words like *peace, enemy, sad, below,* and the wholes of which the following words are parts, *door, pillow, letter, leaf, button;* and particular things of which class names are given, *book, tree, room,* etc.:—requires readiness of association as well as a stock of information. Several of the tests require a knowledge of reading and writing, with which the majority of the feeble-minded children are not equipped.

Dr. Norsworthy's investigation is one of a number of interesting attempts to gain an insight into the psychology of the mentally deficient by means of the experimental method. Her methods and results offer no conclusive settlement of any question as to the correlation of mental and physical characters of normal and mentally defective children. That her work is not more conclusive is probably due to the fact that experimental psychology has hardly reached the stage of development where it can supply the requisite tests. For the present, we remain in the position of testing the tests. Laudable as is Dr. Norsworthy's attempt to demonstrate the value of a small group of tests, and to show us a method of correlating results, we cannot help but feel that her monograph is marred by an injudicious jumping at far-reaching conclusions, which can only serve to subject the experimental psychologist to the derisive criticism of his scientific colleagues.

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NEWS AND COMMENT.

Americans have been familiarized to the point of satiety with the dogma that more and more children should be brought into the world in order that the race may not languish and die out. The older nations, by safeguarding the lives of the children that they have, are adopting the wiser principle of economy. They act upon the belief that if the rate of infant mortality can be lowered, the birth rate may be allowed to take care of itself. Germany and France have in recent years organized societies to educate mothers in the care of young children and to provide for them medical attendance and, if necessary, proper food.

The movement in England is of more recent inception. In London it is now entering upon its second year, the results of the first year's work having been decidedly encouraging. The Marylebone Health Society in co-operation with the Marylebone General Dispensary has been running for a year its scheme for training mothers and furnishing medical advice. Their first annual report shows that 98 babies were treated, 58 were brought regularly, and of these 46 made good progress. The report proves that while poverty is sometimes the cause of a high infant mortality, the chief cause is ignorance of what ought to be done for the child, and in these cases ignorance is much more easily remedied than poverty.

A conference was held on July first by the St. Pancras Mothers' and Infants' Society, at which a school for mothers was organized. Training is to be given to married women and to girls in the feeding, bathing and clothing of infants and the treatment of the minor ailments of childhood. With the aim of inducing mothers to nurse their own children, the society will provide nourishing dinners at nominal expense for the mothers, while those who have been advised not to nurse their children will be given instruction and help in the preparation of suitable artificial food. Benevolent people in London who are interesting themselves in the movement expect it to relieve the excessive infant mortality, the chief cause is ignorance of what ought to be done civilization of their country.

At the meeting of the National Education Association held at Los Angeles last summer, the board of directors authorized the appointment of a committee of investigation into the Provisions in Public Schools for Exceptional Children. Other committees authorized at the same time were: On the Culture Element in Education; on a System of Teaching Morals in Public Schools; on Industrial Education in Rural Schools; on Shortage of Teachers; on a National University; on Courses in Manual Training for Elementary Schools.

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Miss Grace Helen Kent, formerly a student of psychology at the Iowa State University and later at Harvard, has returned to Philadelphia and will spend the winter in psychological work at the Philadelphia General Hospital.

Dr. Karl Stumpf, professor of philosophy at the University of Berlin, and the author of several well-known works on psychological subjects, has been elected rector of the University of Berlin for 1907-08. The position is filled each year by a different member of the faculty, and is much coveted, not only for the sake of the honor and prestige it confers, but also because the rector's fees accrue to the holder, and amount to about twenty thousand dollars for the year.

The Riverside School, of Pittsburgh, Pa., has just succeeded, after a campaign of ten years, in inducing the school board to equip the building with baths. The baths will be used by the pupils during the day, presumably under the supervision of a school nurse. After school hours mothers living in the neighborhood will be permitted to use the baths for themselves and their younger children.

Edwin Grant Dexter, Ph. D., professor of education in the University of Illinois, who has been appointed commissioner of education in Porto Rico, has gone to that island to enter upon the duties of his new position.

The work done in the public schools in the past four years by the Visiting Nurse Society of Philadelphia, through the activity of its school nurse, Miss Anna L. Stanley, has yielded results of such importance that the society has resolved to extend its influence to a larger field this winter. Four assistant nurses have been engaged for a term of three months. Under the direction of Miss Stanley each nurse will have charge of from three to five schools in the poorer sections of the city. The nurses will co-operate with the medical inspector at the schools, and will visit the homes of the children to see that his directions are carried out, and to assist the parents in improving sanitary conditions at home.

It is well known that the summer camps for boys and for girls have increased notably in numbers and efficiency during the past ten years, there being now some four hundred. Probably over twenty thousand children went into summer camps during the past season. Eight years ago Winthrop Tisdale Talbot, M.D., the director of the oldest camp for boys, established a winter camp school at Holderness, N. H., as a means of continuing the training which had proved valuable for many years during the summer. Permanence and solidity are now being given to this institution by its becoming incorporated under the laws of New Hampshire under the name of Camp Asquam, and by the co-operation of well-known young men, alumni of the camp, as

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members of the corporation, and by the enlistment of a number of leading educational authorities in America to act as an advisory council.

The routine of the daily life at Camp Asquam is the result of years of experiment in making boys healthy, strong, and efficient. Experience has proved the value of long hours of early sleep in the fresh air, careful selection of food and its proper preparation, deep breathing exercises, which resulted last winter in an average increase of over thirty per cent in lung capacity, concentration upon a few subjects instead of many in school work, teaching at an early age the best methods of acquiring information quickly and thoroughly, and studying the physical causes underlying application and concentration. All book study is done in four morning hours with as little formal recitation as possible and with intervals of intellectual relaxation and muscular exercise. After dinner there is a short period of rest, and the afternoon is spent out of doors, or in stormy weather in the shops. Supper is at dusk during the winter, and in the evening there is no book study, but the time before the early bed hour is taken up with interesting physical and chemical experiments, music, charades, and games. Horseback riding and the care of horses, wood chopping, work on the farm, and rifle practice as a means of improving nervous control, enter largely into the educational plan. The efficient results gained by this mode of living have thus far amply justified Dr. Talbot's departure from conventional methods.

The Triennial Convention of the Protestant Episcopal Church, which was opened in Richmond, Va., on October 2d, is still in session. On October 11th the House of Bishops adopted a resolution presented by Bishop David H. Greer, of New York, calling upon all churchmen to join in fighting child labor in the United States. It reads as follows:

"WHEREAS, The evil of child labor is apparently on the increase in the United States, and it is known that the employment of children in factories, mines and shops reduces wages, disintegrates the family, deprives the child of natural rights to a period of training and depreciates the human stock, and

"WHEREAS, We recognize the profound responsibility of the Church for our ethical as well as our spiritual standards;

"*Therefore,* We call upon employers and parents to use their influence to better legislation and better enforcement of the laws, to the end that the exploitation of the labor of children shall become impossible in this Christian country."

The resolution was presented to the House of Deputies and adopted by that body on October 12th.

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The Psychological Clinic

VOL. I. No. 6. NOVEMBER 15, 1907.

RETARDATION THROUGH NEGLECT IN CHILDREN OF THE RICH.

BY LIGHTNER WITMER.

Mental retardation must not be considered as the equivalent of mental defect. In many cases, doubtless, retardation rests upon a defect of the brain or some other physical defect, the result of heredity, accident or disease, but in some cases the retardation is purely functional and may be a consequence of disuse through neglect. A normal child of six years is possessed of a group of mental and moral qualities characteristic of his age and sex. These qualities change into others through the acquisition of new or the loss of old qualities and through modification due to growth. The normal child of nine years of age differs from the normal child of six. If a child who was entirely normal at the age of six remains in the possession of the same mental and moral qualities when he has reached the age of nine, he presents the condition of retardation. This retardation may involve one or more, possibly the entire group of qualities. A single quality may have a very potent influence upon the course of intellectual development. Thus, the central mental process determining the course of intellectual evolution is attention. The development of concentrated attention results partly from the genetic process alone,—that is, it is a growth from within,—and partly from the environment in the form of school training and home discipline. Through neglect of proper training, the young man of twenty-one may find his powers of attention inadequate for the proper fulfillment of the requirements of a college course and more appropriate to a child of eight or ten. He is suffering from a partial arrest of development, the result of neglect. An arrest in the development of attention will carry with it an arrested development of the intellectual processes.

The children of the rich and especially of the very rich, are as apt to show the results of neglect as are the children of the very poor. According to Dr. Nicholas Murray Butler, the child of rich parents is often too seriously handicapped

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by the effects of home life and school training to profit by the opportunities afforded by the college, into which in Dr. Butler's words, "he is hoisted over the entrance examinations," through the aid of special coaches and "then left to his own limited and rather dingy resources." "The rich boy," he says, "who receives a good education and is trained to be a self-respecting, responsible member of the body politic, might in time share on equal terms the chance of the poor boy to become a man of genuine influence and importance on his own account. Just now, by the neglect or worse of his parents, the very rich boy is apt to be relegated to the limbo of curiosities and too often of decadents." The responsibility rests primarily, in Dr. Butler's opinion, "upon the folly and indifference of the fathers and the vanity and false pride of the mothers." But this responsibility is shared by the fashionable private school and the private tutor. With Dr. Butler, I believe that the home and school, chiefly through neglect of discipline, permit the minds of many children to remain undeveloped during the formative period. The discipline that is required is not merely that which makes for obedience. It is the discipline of work and strenuous effort, the discipline that trains the memory, the will, the attention, and forms habits of work which permit the children to assume progressively more difficult tasks.

The motive that inspires President Butler's criticism is social, and has in view a high standard of citizenship; he desires the children of the rich to exert an influence upon society and feel a responsibility commensurate with their wealth. The problem of the child psychologist and trainer of individual children is comprehended within somewhat narrower limits. It is training to the highest degree of efficiency and adaptability. Each child receives at birth a brain endowed with possibilities of mental and moral development up to a theoretically assignable limit. Like a field, the brain must be tilled and cultivated to bring forth a rich harvest. Rather like a race horse, it must be nourished and exercised, disciplined and trained, in order to develop all its latent capacities. The better our methods of brain or mind culture, the more efficient will be the product. The community suffers a great loss if brains of unusual capacity, or if brains of even average capacity, are allowed through neglect to arrive at maturity—after which time little can be done—with capacities much below what we have a right to expect from our knowledge of the conditions of heredity and environment.

It is through a study of individual cases that I believe we

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shall be able to point out the causes of this deficiency, or perhaps I should call it inefficiency, at maturity. The case that I propose to report will present a history of failure, but failure may be as instructive as success, provided the conditions have been carefully studied and the nexus of causes and effects subjected to adequate analysis.

In October of last year a well-known physician invited me to consult with him concerning the appropriate mental and physical treatment to be accorded a puzzling case which had come under his observation. A young man, then twenty-one years of age, had made three successive efforts to pass the entrance examinations of —— College and had failed. The third and last effort had been made in the summer of 1906, after he had spent a complete year at what is rightly regarded as one of the best coaching schools in this country. His ordinary conversation revealed no trace of mental deficiency, nor would his physical appearance awaken any suspicion of degeneracy. It seemed that a careful mental and physical examination ought to reveal the treatment required to enable him successfully to pass these examinations.

With the physician I made a mental and physical examination extending over several days. His pedagogical history revealed that he had first attended a fashionable school conducted by a woman principal, and that he had then gone to one of the best and most fashionable college preparatory schools in the country, where he had spent four years. Boys who had been in his class at this school were then in the sophomore class of —— College. His retardation was ascribed to the fact that in 1903 he had suffered severely from grippe, and one lung had become affected. This compelled him to leave school, and to pass the winters of 1903, 1904, and part of 1905 in the South. Here he spent a great part of his time in outdoor life, and was supposed to be preparing for entrance to college under the instruction of private tutors. His tutors were not regarded as very efficient, either by himself or his father. In the spring of 1904, with this private preparation, he first tried the entrance examinations and failed in all branches except history, in which he obtained and continued to hold two credits. In 1905 he took all the examinations except history, and failed in every branch. In June, 1906, after one year's attendance at the coaching school, he tried every subject in the spring examination, excepting that for which he had credits, and failed in every branch attempted. In the fall, however, after a complete rest during the summer and with only

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one week's review, he tried the examinations in English, algebra and geometry, and succeeded in making a pass mark in the last named subject.

His intelligence appeared to be normal, as revealed in ordinary conversation. If one engaged him in what approached a more serious conversation, he was found to be wofully ignorant, but this would not be considered worthy of special comment by any one who is acquainted with the stock of general information possessed by many young men who are thought to be fitted for college, and by young women who are presumed by the teachers of fashionable schools to be trained for social life. This young man was well able to conduct himself with credit at an afternoon tea.

His memory for names and dates was reported to be very deficient. Thus, his father claimed that he was often unable to give the names of persons with whom he was well acquainted, for example, guests who were staying at his father's house, although he might be able to describe their individual characteristics accurately. He had presumably been prepared for three different examinations in Latin, and yet when I asked him what he had read, he was able to tell me little more than "Vergil, Cicero, and Cæsar." He could not name any oration of Cicero he had read. He said he remembered the oration against Catiline, and that he had read three books of the Aeneid, and all of Cæsar's Commentaries, but he gave me this information only in answer to specific questions, in which I first named what I supposed he must have studied. At the time I saw him he was reading with his instructor in English, Pope's Epistle to Dr. Arbuthnot, but he could not tell me anything more about it than that it contained some reference to Addison.

This verbal amnesia prepared me for the discovery that he was deficient in spelling. In a brief dictation I found such words as *seperate, antisipate, purspire,* and *heven.* His writing was poor, unformed, and slow. It bore distinct marks of lack of training. I asked him to write *croud,* and *crowd.* He was not certain which was the correct spelling, but inclined to *crowd.* He spelled correctly *which* and *witch,* and knew the proper use of each form. He did not know whether *releaf, relief,* or *releif* was correct, but inclined to *releaf.* I gave him the correct spelling of these words in the morning, and found that he spelled them all correctly in the afternoon. He said that he remembered them from the drill I had given him in the morning.

His reading showed the same remarkable lack of efficiency

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and drill as his writing and spelling. He delayed over even very small words. His reading was that of a child in the third school year, devoid of all expression, with frequent substitution of words that were not at all like the words on the page. Thus, he read *threshold* for *shoulder, open* for *upon,* and *heel* for *hill.* These errors suggested deficient eye-sight, badly trained attention, and bad tutoring. His articulation in reading was very poor and quite different from that which he employed in conversation.

The mental examination had shown easy distraction of attention. I tested this with numerals, calling out groups of five, six, seven, and eight numerals. He never failed in a test of thirty consecutive trials on a group of five numerals, but he often failed on a group of six numerals, and never succeeded in getting a group of eight numerals correctly. I considered the results of this test showed that his memory span was normal, but that attention and interest rapidly flagged.

This deficiency of attention was shown in a more striking manner in testing him with a line of verse,—the iambic pentameter of Milton's "Paradise Lost." I covered up the printed page and exposed one line at a time for a fraction of a second. The first time I did this he read the line perfectly; in fact, he made no mistakes in the first five lines read, but on the sixth line he made a mistake, and during the entire test he never afterward was able to hold his attention to the task of reading correctly the words of a line.

This condition is one that has been called aprosexia, an inability to give sustained, concentrated attention. It is more or less characteristic of the attention of the young child, but school training and the progress of mental development should bring with it a capacity to sustain and concentrate the attention. Aprosexia was first described as a mental symptom associated with adenoids. This young man's attention was, therefore, one of arrested development, and led immediately to the suspicion of the possible existence of adenoids. The condition of aprosexia, however, is indistinguishable from fatigue. The child whose attention wanders and who loses interest quickly may be the victim of a rapidly generated fatigue which may come from other causes than arrested development or adenoids. In this case, however, adenoids had been present for many years, and had been removed only two years before, when he was nineteen years of age. Following the removal of the adenoids, he grew from three to four inches in height, and his weight increased from one hundred and five to one hundred and forty pounds. At the time of the

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examination he was somewhat under weight, his height being five feet eleven inches. He had formerly suffered from ear aches, but not for the last two or three years. Before the removal of the adenoids he was a mouth breather, and much troubled with colds. His digestion was poor, and he complained of stomach phenomena, especially of black spots before the eyes. He slept well. He was fond of exercise and fresh air, and believed that city life caused him to diminish in well being. He said he still had affected tonsils on coming to the city. Knee jerks were normal, or but slightly exaggerated, the right slightly greater than the left. He had good station and gait, though the body was rather poorly balanced on the hips; there was some asymmetry of the trunk and a slight compensatory lateral curvature of the spine. He complained of nervousness, but it was more like the restlessness of ennui. The only marked sign of nervousness was a state of mental confusion, sometimes approaching collapse when he was called upon for any kind of mental test; as for example, to pass an examination. He thought that in this condition he forgot what he knew quite well. He considered himself handicapped in his examinations by his limited vocabulary, his deficiency in spelling, and his lack of facility in writing.

Expert opinion is desirable in almost every case of retardation. In this case it was especially called for, owing to the absence of any pronounced mental or physical symptom indicating a leading cause for retardation. The examination of specialists showed the naso-pharynx to be hyperæmic but free from obstruction, and the tonsils were not much enlarged; no adenoids were recognizable on ordinary examination. There was slight retraction of the ear drums, a catarrhal otitis media non-progressive, caused by adenoids. Hearing for the voice was normal, as shown by the whisper test. For the watch it was reduced to $\frac{1}{15}$ for each ear; there was slightly reduced bone conduction for all forks. Examination of the eyes showed nothing but a slight far-sightedness, for which the constant wearing of glasses was recommended, long enough at least to note the effect. Examination of the heart and other organs gave no indication of defect.

Physically, therefore, he was given what amounted to a clean bill of health. This made a further mental examination all the more necessary. I therefore spent two days in the coaching school, during one of which I observed him at his work in the several class rooms. Even if he had been a clever and hard-working student, he required, in my judgment, at least two or three years' preparation in order to pass the entrance examinations

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of any reputable college. His instructors, however, were unanimous in the belief that after a year's work he could be admitted to —— College, at least with conditions, if he would only devote himself exclusively to his studies. That his coaches could entertain this belief when the boy was deficient in even the elementals of a common school education came as a startling revelation to me of the ease with which boys, having no real preparation for academic life, can yet be trained to jump the barrier of the entrance examinations.

The instructor of mathematics insisted that his work in this branch was good. He claimed that he knew enough to pass the entrance examinations in algebra and plane geometry, and that if it had not been for stage fright he would have passed both these examinations the previous June; whereas he had failed in both in June and had passed the examination in geometry in September, only after a summer's rest. The instructor thought him better prepared in algebra than in geometry; he denied that he had observed any noticeable lapses of memory, nor had he observed the attacks of fatigue. The chief complaint was directed to a lack of steadiness in his work and to the distraction of his attention by his family, his sports and his social obligations.

The instructor of French was very optimistic. He felt that Elmer (as I shall call him), was able to read French well, but that he had a phonetic difficulty, which he had observed in very many boys. He did not think that Elmer's case was worse than that of other boys; he felt that he could get him through his examinations in elementary and advanced French on five hours of instruction a week. It is probable that Elmer had made so little progress in French that the instructor failed to observe the limitations of his memory.

The hopelessness of endeavoring to get him into college was brought home, to me at least, when it came to his Latin. He had prepared a written exercise which required him to use a number of verbs in the first person. He gave them all in the third person, and seemed quite indifferent when his error was pointed out. Toward the end of the hour I asked the instructor to have him translate a passage from Cæsar. His knowledge of the vocabulary appeared to me very deficient, and the evidence of defective memory was conclusive. His Latin instructor did not believe that he could prepare him to pass the entrance examinations in Latin if he kept on with all the other work he was then taking at the school. He claimed that Elmer had an ability to translate, but no ability to acquire the exact grammatical forms. I per-

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ceived from my examination that he was an exaggerated type of the boy all teachers dread. Such a boy translates a passage fluently and with a quite commendable approximation to its meaning, but he will make a few glaring mistakes that show a faulty knowledge of the grammar. A future participle, let us say, is translated in his flowing, slipshod fashion as a past participle, despite the fact that the sense of the passage as well as the construction suffers. A review of the conjugations of the verbs suggests itself as desirable. Teach him the first conjugation and he learns this satisfactorily; teach him the second and he learns this with apparent ease; teach him the third and then review him on the first, the discovery is made that he has already lost some of this. After he has learned the fourth conjugation, it will be found that he has lost very much of the first and some of the second and third. He is then taken through all the conjugations again and, depending upon the amount of patience possessed by his teacher, he will receive a more or less protracted drill in the grammar. Finally the task of teaching him the exact grammatical forms will be given up for the time being, and he is put to translating again, in the hope that his memory, by some happy accident of growth, may overtake his understanding.

This difficulty is either a specific form of amnesia, an inability to establish a memory for the paradigms of a language, or else it is due to faulty methods of education and to deficient attention. It is not an easy matter to prove the existence of a specific form of congenital amnesia verbalis. It would require us to find a boy whom in early years we had attempted to train by aid of the most approved methods and with whom we had, nevertheless, failed. I have under my care at the present time a boy who appears to present this condition; he seems quite unable to acquire the visual forms of language, although he is facile enough in ordinary conversation and has fair intelligence. But in the case of this young man, the matter is not clear, owing to the fact that we have a positive history of inefficient educational methods and of defective training of the attention. The experiment had never been satisfactorily made to determine whether there was in his case a real inability to memorize grammatical forms; he had always pressed on to translation before he had acquired the elements of the grammar.

In his English work the defect of memory, which appears as an amnesia verbalis, was well marked. He could not form a simple sentence. He had practically no knowledge of grammar and it seemed almost impossible to teach him any. He was

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extremely deficient in spelling, and no amount of training appeared to increase his accuracy. In addition to the lack of memory for spelling, he had a lack of personal conviction that he was right. If he spelled a word correctly, and I asked him, "Are you sure it is right?" I could always make him uncertain, and this was the case with the most common words. It seemed to me that it would be necessary in teaching him orthography, or indeed any other branch of instruction, to train him into something like self-reliance. He did not offer active resistance; there was no evidence of what is called negativism, but resistance came in the shape of apathy.

This indifference, apathy, or lack of mental energy, was partly temperamental, but it appeared also under conditions that suggested fatigue. On the day that I followed him about from room to room, I observed that he did fairly good work the first period, and held out almost for the entire hour. His teacher was an excellent one, interesting, rapid in the moves that he made to attract the attention, and able to draw a good deal out of a pupil in the way of energy. The second hour, the boy was less alive at the start, and very rapidly lost interest in his work. Before half of the hour was gone, he was mentally inert, apathetic, mechanical in his answers, easily confused, and really indifferent as to whether he was right or wrong, and yet non-resistive, patiently following as well as he could. During the third hour his instructor was again one who was unusually capable of awakening interest and attention, and for a brief period, about fifteen minutes, the boy seemed shaken into life, but soon a condition of mental somnolence, almost of stupor, ensued. The tutor kept on with his work, every bit of it in my opinion worse than useless. At the end of the morning's work the boy's face lacked all expression, his eye, lustre. He had the dull, vacant expression of one afflicted with dementia præcox. It was only when he was about to go, and I spoke to him of his week-end visit to his family, that his face brightened and regained a look of intelligence.

His day's work at this forcing school consisted of four hours in the morning and two in the afternoon. I resolved upon a decided change of program. In the first place, I cut off the two afternoon hours, leaving him the four hours of the morning only. This cut out two subjects in which he would be required to pass examinations. I felt that we could not afford to take the risk with all six subjects. It also appeared to me that he could not stand a period of one hour. I therefore instructed his tutors

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to consider a full period's work as forty-five minutes. The remaining fifteen minutes of each hour were to be devoted to gymnastic work in the gymnasium, light exercises in the school room with the windows open, or to relaxation and rest. If the fifteen minutes in each hour did not suffice to overcome the effects of fatigue, then I advised a further encroachment on the study period; and I gained the father's consent to have him excused for the day at any time when his condition seemed to unfit him for work. Skilful as these tutors were in the work of cramming knowledge into an unwilling brain, they were incapable of judging when the moment of fatigue arrived, and on subsequent occasions I saw the boy working under conditions which I considered far from hygienic.

The afternoon was to be devoted to his physical well-being, and to the preparation of his studies for the next day. There was every reason to believe that the hour and a half which he professed to spend in preparing his lessons for the next day was perhaps unconsciously wasted. I therefore engaged a young man as tutor in the afternoon. I took a great deal of care in his selection, and mapped out a definite program. My instructions were that Elmer should get his lunch at one o'clock on the completion of the morning's work and should meet the tutor at two o'clock. The tutor was to go with the boy to his country home, to see that he spent as much of the afternoon as possible in the open air and that he gave two hours during the afternoon to the preparation of his work for the next day. The tutor was to arrange his work to suit the actual conditions; if Elmer was working well, he was to keep him at it; if he appeared to be mentally fatigued, he was to take him for a walk, play tennis, wrestle, box, or engage in whatever exercise suggested itself as desirable. A physical trainer gave him resistive exercises at his country home for a half hour every afternoon. The tutor and physical trainer occupied the boy's time from two until half past five. This gave him plenty of time to rest before dinner, and to dress. In the evening he was left to himself, with the understanding that he would spend an hour in preparation for the next day's recitations.

The change to this new program was made on the first of November. By the middle of November his instructors noted an improvement in his work, the English instructor in particular observing a marked improvement in attention and ability to grasp ideas. Elmer reported that he no longer experienced the

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feeling of lassitude and that he was much less apt to fall into a state of mental confusion.

In two important particulars, the young man refused to co-operate. He would not wear glasses except in the class room; in the course of a couple of months, he stopped wearing them altogether. He also refused to allow the tutor to go with him to his country home; this appeared to him as too much like having a nurse or keeper. He was a young man already of independent income, and it was important to obtain his hearty co-operation. A compromise, which I regard as in many ways unfortunate, seemed necessary. The tutor, therefore, helped him at the school with his lessons for the next day; this naturally resulted in the study period being more or less of a fixed exercise. I believe also that the tutor failed to carry out my instructions to let the young man off entirely when he was not feeling in good condition.

Other difficulties appeared which tended to emphasize certain factors as perhaps the most important in the causation of his retardation. An admirable glimpse into his mode of life at this time and throughout his entire youth is given in a report to me from the headmaster of the school. "One great difficulty with Elmer's work is that he has a good many other things to think about. We are to have a football game with —— next Saturday, and excellent tickets have been scarce. Elmer desired six tickets, and he early became concerned as to whether he was going to get six good ones. He has, therefore, had to spend time visiting the various ticket agencies in town, telephoning to them, and talking over with friends out here the possibility of getting six good tickets. He got them through the kind offices of one of my clerks to-day, but he would have been about as sure of getting them had he not given the matter a moment's attention. No assurances, however, would convince him of this; he wanted six tickets and he must have them right in hand almost the day that the tickets were issued by the Athletic Association to the original applicants. Now that he has obtained the tickets, he is obliged to start for ——— on the one o'clock train to-morrw, so that he may meet his family and arrange with them for going to the game. The necessary preliminaries to getting the one o'clock train will cause him to miss some of his recitations to-morrow, and he will miss all of those on Friday. His father does not realize how serious an interruption things like this are. Although I have not questioned Elmer about the matter, I presume the tickets are for the use of his family; he certainly cannot

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be going to take five men friends to the game, and he has arrived at the age when he would hardly take five ladies, he would probably prefer to take one and possibly a chaperon. The result is that he has had here a week which is practically worthless, and that is *one-thirtieth of his working time before next June.* The other boys who are studying here are all going from here Saturday morning with me in a private car; they have not had to take any thought as to how they were to get to ——, and I do not intend that they shall take any thought as to how they will get back. They have each been provided with a ticket, and although all their tickets were not so good as those of Elmer, some of them were. They will lose but very little work, and the game will come to them as a very enjoyable Saturday outing. It will be nothing more than that; they will have all their work done for Monday before they leave for ——, and there is not the slightest chance that, barring some entirely unexpected accidents, they will not be ready for work on Monday morning. I mention these things not because I am unwilling that Elmer should accompany his family to the game, but because I want you to realize that the difficulties in Elmer's work do not every one of them arise from his physical condition or from his backwardness. *Admission into —— College is a businesslike matter, and demands the same devotion that any other successful business enterprise does."*

Elmer was one of those young men, and there are many, who find it extremely difficult to get their attention down to work, if there is any cause for emotional excitement. Many young men find it impossible to think of aught else than the coming football game or the social engagement for some future evening. It is only after adult life has been reached that engagements which excite considerable emotional interest cease to have this effect upon the attention. In Elmer, this emotional distractibility of attention was combined with a temperamental tardiness. The tardy boy or adult is one who lets the interest of the moment prevent his looking forward and arranging for the next piece of work on hand. Elmer was supposed to be on hand for his lesson in English at nine o'clock, and to work for forty-five minutes, which gave him a fifteen minute intermission before taking up the work of the next period. From November 30th to December 20th, inclusive, there were seventeen working days, which gave him 765 minutes of work. During this period he lost, through absence and lateness, 399 minutes, more than one-half of the time.

The following record of these days is an instructive and not uninteresting document:—

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Date.	*Time of Arrival.*	*Record of Recitation.*
Nov. 30	9.47	Too much Thanksgiving.
Dec. 3	9.07	Interested in "The Rivals."
" 4	11.30 (30-minute period by his arrangement.)	Still interested. Play read aloud. Mistakes of Mrs. Malaprop underlined, and conjectural emendations made in margin.
" 5	9.23	Writes in class a paragraph headed "My Impressions of Mrs. Malaprop," in which he confounds that matron with Lydia Languish and writes about *her*.
" 6	9.26 (stormy.)	Given same subject for outside work. Composition not done—forgotten. Writes in class again on Mrs. Malaprop. Forgets entirely what her chief distinction to fame is. When her misuse of words is suggested, says, "Oh, yes."
" 7	9.02	Recitation satisfactory.
" 8	Absent (train stalled).	
" 10	9.15	Composition poor; misspells *afraid, busy, copy, door, floor, sew, sour, sugar, whom.*
" 11	9.20	Composition not re-written on account of headache.
" 12	9.10	Work incomplete,—not feeling well.
" 13	Absent (machine breaks down).	
" 14	9.15	Good composition. Writes out Browning's "Incident of French Camp" in his own words.
" 15	Absent.	
" 17	Absent.	
" 18	9.10	Good composition. Reads "King Robert of Sicily" and writes story of same.
" 19	9.15	Examinations.
" 20	9.16	Finishes "The Rivals." Reads unintelligently.

The physician who was overlooking the care of Elmer's health, considered him to be in good condition. He believed that he needed exercise only as all young men need it. He inclined to look upon his difficulty as one entirely due to lack of early training. He told me that he had known a number of sons of the very rich, some of whom had succeeded in getting through college, who had exactly the type of mind possessed by this young man. His fatigue he attributed entirely to the strain that was put upon a mind incapable of endurance through lack of training. This view makes the case all the more interesting and instructive. If his deficient powers of attention and memory were due solely to lack of home and school training, the case becomes a purely psychological and pedagogical one. We have to do with a young man of twenty-one who has the powers of attention of a boy of six or seven. If we should ask a boy of this age to attempt the work that we were forcing upon Elmer, he would undoubtedly soon show signs of fatigue and he would manifest this in aprosexia and in periods of mental torpor. Through the study of this case, I am inclined to lay greater stress upon the lack of proper mental training than upon the symptoms of physical deficiency, the adenoids, etc. But I do not feel that I am warranted in excluding the physical factor entirely. Despite the medical opinion, I think

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there is reason to believe that the boy was physically below par and that he needed outdoor exercise to put him in condition to resist fatigue. I was also very careful of his diet, and insisted upon his eating a satisfactory lunch and taking a sufficient amount of time to it.

Another difficulty, resulting in passive resistance, was the lack of ambition, especially the ambition to excel in intellectual work. He had no real desire to enter college. Life for him was a series of trivial amusements; he did not participate keenly in even his father's ambition to have him enter —— College in order that he might become a member of the various social clubs. Neither thought of college as an educational institution. To inspire the youth,—sugar-coat the pill,—college was put before him, in Dr. Butler's words, as "an agreeable country club, where one takes his valet, his polo ponies, his bull dog, his motor car." During the Christmas holidays, in an interview with the father, at which time my suggestions for the pedagogical treatment of the case were passed in review, I found occasion to distinguish between getting an education and getting into college. If the father had wished his son educated, I should have recommended an entirely different procedure. I would have outlined a two years' course at least. He would have been kept on elementary language work in English for at least a year before the attempt was made to prepare him for his entrance examinations. This procedure would have ensured an education as well as entrance to college; but it was not for this that my advice had been sought, and I continued to direct my efforts to planning his daily life in such a way as to give him the best possible chance of passing the examinations in enough branches to admit him to college with the least number of conditions.

It was agreed that the boy should take up his residence at the school, where his whole time, his meals, and his sleeping hours, would be under the supervision of his tutors. With the beginning of the new year this plan went into effect, and he entered upon the long pull of the spring months under as favorable conditions as I could obtain for him. Even the distracting interest in his automobile abated, and the machine was shortly afterwards sold. In May, when I again visited the school, I found that all of his tutors felt more hopeful of his ability to pass the examinations. It had proved necessary, however, to give up the attempt to prepare him in Latin, but in English he was reported to have made great improvement in sentence structure and expression. He seemed to have a wider intellectual outlook and greater power of choice

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in the material used for his compositions. He got more vivid impressions, got them more quickly, and acted upon them with more independence. Without exception, his instructors believed that he would be able to pass the examinations for which he was studying, provided he did not become nervous and lose his head. He appeared to be in excellent physical condition. I feared only that he might approach the examination period in a condition of reduced mental vigor; I dreaded the panic,—almost collapse,—which preceded the previous examination.

The point of view of the psychological trainer and that of the professional coach differ on this important question. The coach is interested in getting as much work out of the boy as he possibly can. As the examination approaches he expects him to sit up late at night and study harder; he arranges extra hours of special coaching; the last week before the examination is a period of great activity. During the examinations, every hour not spent in the examination room is given over to preparation for the next examination. I insisted upon the importance of refraining from this strain upon Elmer's energy, even to the extent of suggesting that if he fell into a state of fatigue a week or so before the examinations, he was to be allowed to drop everything and go into the country. I felt it would be safer to risk his taking the examinations without the last finishing touches which the coach always considers so important, than to risk his coming up for the examination overtrained and worn out with anxiety and extra work. I carefully outlined a daily plan to be followed during the examination week, and I strongly advised that he be given no coaching on the days on which he was to take an examination. To accustom him to the ordeal of the examination, he had during the year passed several sets of regular examination papers under conditions approximating those which obtain at the real test.

I saw Elmer again on the first day of the examinations. It appeared to me that despite the care that I had taken to warn his tutors, he approached the examinations in what seemed to be a rather poor physical condition. They all denied this, however, and still believe that he entered upon and passed through the examination period in the best physical state. He did not appear to have the same fear of the examination room, and I observed no sign of panic, no physical collapse. Our work with him during the year had been effective on this point. The result of the examination was a lamentable failure. He passed in only one branch (elementary algebra). In advanced French he got a higher mark than in elementary French, and in English his mark

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was lower than it had been the year before. To his coaches the reason for this—and perhaps they are right—appeared during the months of April and May in a gradually increasing interest in the construction of a boat. Scarcely a day passed, I was told, that he did not write a letter of instructions. He left the school on visits to the boat builder; and on one occasion he went to his home from Friday to Monday without even notifying the headmaster of the school that he proposed to go. Instead of working harder as the examinations approached, he made less effort and seemed to care less about succeeding. However this may be, I believe that his instructors erred at the beginning of the year in thinking that he could be made to pass the entrance examinations as the result of a year's work.

It would not surprise me if my analysis of the interdependent social, psychological, and physical factors involved in this case should provoke entirely opposite conclusions. Viewing this history from the educator's standpoint, many will find in Elmer only a common type of difficult case, the boy of normal mentality, whose failure is due to lack of interest in his work. This conclusion would overlook the psychological characteristics, which, as I have shown, border on the pathological. Those who arrive at the opposite conclusion, that there existed a congenital mental defect which no amount of training could overcome, would also fail of a right understanding of the case.

In my opinion, the history shows that we have to do with a child, mentally and physically normal at birth, endowed with mediocre but not deficient intellectual capacity,—enough, at least, to enable him to hold his own in school and college. We find this child at the age of twenty-one with insufficiently developed intellect and character. The adenoids were his only physical handicap to normal development. Their tardy removal at the age of nineteen left him with a susceptibility to fatigue, and doubtless also contributed to the mental retardation which he manifested at the age of twenty-one His history would probably have been different had they been removed when he was twelve or thirteen years old. However, the failure to remove them earlier in his career was not the only cause of arrested mental development.

I have emphasized as a cardinal mental symptom, the fluctuation of his attention due to inability to sustain and concentrate it. Some fluctuation of the attention is found in every adult normal mind. In Elmer, its pathological character appeared in the extremely short period during which concentrated attention could be sustained. This type of attention, *i. e., aprosexia,* is not only characteristic of adenoids, but also of the normal child

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in the first years of school life. Elmer's aprosexia may therefore rest upon the physical basis of the adenoids, or it may be considered a symptom of infantilism,—an arrested mental development due to lack of adequate home and school training. This latter interpretation is supported by the fact that his attention in other respects resembled that of the yet untrained child. He was unable to get his mind down to his work, or to keep it there for any length of time; he continually thought of other things, notably future engagements. If we succeeded in keeping him at a task, a pathological fatigue ensued, from which there was no immediate recovery. An hour or two of work would cause him to fall into a condition that suggested mental stupor. In this condition he appeared to lose clear consciousness and followed a lesson with acquiescence but with no active co-operation. In exaggerated form it became mental confusion, or a lapse of memory, perhaps even of consciousness. In doing a problem in mathematics, he might carry out the work correctly and intelligently up to a certain point, when an entirely wrong number would be set down, despite the fact that the right number stared at him from the page. The error is one which a teacher is apt to attribute to carelessness or "not thinking," but is probably due to a momentary lapse of consciousness, or at least of memory, and is a phenomenon of fatigue.

Another symptom of doubtful import is the *amnesia verbalis,* which showed itself in the inability to remember the names of persons and places and to acquire an accurate knowledge of orthography and syntax. He could not convey a simple thought in a succession of sentences properly formed and correctly spelled. This condition may rest upon a congenital and incurable defect of the brain; it is found, however, in so many children who are subsequently trained out of it, that I believe we must assume its survival in a boy of twenty-one years to be due to neglect of proper training in the early years of school life.

There is little necessity for hesitation or doubt in forming an opinion as to the cause of his repeated failures to pass the college entrance examinations. These were due to faulty educational methods, or perhaps more correctly to defective educational ideals and insight. The last two failures were each made after a year of the best coaching this country can afford. The instruction, however, was unintelligently applied to a case unfitted to profit by it. Instead of attempting to prepare him for college in one year, a course extending over two or three years should have been outlined. I am convinced that at any time after he had passed his fifteenth year he could have been prepared for college in, at the most, three years. Probably it would have been necessary

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to take him from his social environment and place him in a school, perhaps in a camp school, where he would have been under constant medical, physical, and educational supervision. His coaches cannot be blamed for failing to appreciate the complex character of the educational problem which presented itself in this case. Nor can they be expected to educate the parent as well as instruct the boy.

Secondary schools, however, which are supposed to educate their pupils, as well as prepare them for college, must in time be expected to have a professional opinion which will be accepted in these cases as authoritative. Their convictions of what is necessary for the acquisition of proper mental discipline must be expressed even in the face of a rupture with socially powerful and wealthy families. The situation presented by this case is not unique. Two boys for whom I recommended this fall a camp or farm school, both at the critical period of from fourteen to sixteen years, both mentally retarded, and one presenting moral symptoms, are, despite my opinion, the one at a fashionable city preparatory school, the other under a private tutor.

The training of such powers of attention as are necessary for intellectual work is the peculiar task of the secondary school. The school, however, cannot adequately fulfil its function unless the child comes to it disciplined to some extent in mind and conduct. In some families, that training of the child's will, which is to serve him in good stead during his school life, begins as soon as the child is born. In others, the child is turned over to servants, governesses, tutors, and schools that fail to impress upon him the serious nature of school work, with the result that he advances from year to year with no strengthening of the will and attention, no habits of industry, no established ambitions toward an intellectual career.

There is reason to believe that a large number of children, without any congenital or acquired physical defect, arrive at maturity with imperfectly developed faculties. This retardation or arrest of development may occur in children as well of very rich as of very poor parents and may in either case result from neglect originating in the exigencies of the parents' social environment. A child may be provided with expensive tutors, or sent to schools of the highest reputation, but this may not save him from retardation if the home training has failed to establish a mental and moral character that will enable him to profit by these opportunities.

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THE VISION OF THE PUPILS OF AN ELEMENTARY SCHOOL TESTED BY THE SNELLEN ALPHABET AND ILLITERATE CARDS.

By J. M. McCallie,

Principal of the Centennial School, Trenton, N. J.

In 1862 Dr. Herman Snellen, professor of ophthalmology in the University of Utrecht, Holland, and director of the Netherlands Institute for Diseases of the Eye, published an improved series of test types for measuring the acuity of vision. The principle which guided him in the construction of these test letters is based upon the fact that the normal eye can just discern objects that subtend a one minute angle, the vertex of the angle being the point where the rays of light cross before falling on the retina.

In order that a letter may be recognized, each one of its elements must be discernible, and hence each of these elements must have a diameter equal to the tangent of an angle of at least one minute. In constructing uniform letters in conformity to this principle, Snellen found that each letter must have at least one diameter equal to the tangent of a five minute angle. Each letter is therefore made in a square which is subdivided into twenty-five equal squares, each small square being equal in diameter to the tangent of a one minute angle. Since the tangent of a five minute angle is equal to 0.001454, to obtain the longest diameter of a letter to be seen at a given distance, Snellen multiplied the length of the tangent of five minutes by the distance (in centimeters) of the letter from the nodal point of the eye; thus, at a distance of one hundred centimeters the height of the letters should be 0.1454 centimeter, and each stroke of the letter should be at least one-fifth of this, or 0.0291 centimeter in length.

The tests described in this paper were made during April and May, 1907, upon the children enrolled in the Centennial School, Trenton, N. J. Although made primarily, of course, with the object of ascertaining the number of pupils whose vision was subnormal, the examination also yielded data for a comparison of the results obtained by using Snellen's alphabet with those obtained by using his "illiterate E."

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Knowing that the scientific value of the work which I was undertaking depended largely upon the accuracy of the methods adopted, I first secured a copy of Snellen's classic work on test types.* This book contains eight letters,—O, L, N, Z, B, D, T, and E, and also the "illiterate E," pointing in four directions,—up, down, right, left. (See figure 1, p. 181.) The characters are all of a size and structure to be read by the normal eye at sixteen (Paris) feet,† and are printed on white unglazed paper, about the thickness of ordinary book paper.

Each one of these letters I carefully cut out, leaving around each a margin of about one-fourth of an inch of white paper. The letters were then pasted on white cards, three and one-half by six inches, being placed one and one-half inches from the top of the card and equally distant from the sides. On the back of the card was written the same letter that appeared on the front. I selected letters that could all be read at one distance, rather than letters of different size, to be read at different distances, because the results could be more easily compared. By having the letters on separate cards, so that only one was in view at a time, I could be sure that the pupil's reply was a judgment on that letter and not on some other in the same line, as often happens when several letters are shown at one time. I was likewise enabled to vary the order of presentation, and so prevent their being memorized; and, by glancing at the back of the card, I knew each letter before the pupil saw it. This plan left me free to give my entire attention to the efforts put forth by the children in reading the letters. By holding the cards in my hands I was able to utilize the best light in the room more easily than if I had used a large card hung on the wall, as is usually done in such tests.

Next I selected the best position for light in each room where the tests were to be made. Beginning with this position, I made chalk marks on the floor the entire length of the room, the first mark being two feet away from the card, the second four, and so on. All of these tests were made in the class rooms while the teacher was carrying on the regular work.

Everything being ready, the pupils were called one at a time and told to stand with their toes to line twenty, with a card held over one eye. Two or three letters were presented. If the pupil could not read them, he was asked to step up two feet and try again.

*Snellen, H. Optotypi ad visum determinandum secundum formularum $v = \frac{d}{D}$ Ed. XVII. (Probebuchstaben zur Bestimmung der Sehschärfe.) Berlin, H. Peters. 1904.

†The Paris foot is a little more than twelve and three-quarters inches of the English scale.

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If he failed again, he was asked to step up two more, and so on until he was able to read each letter correctly with little or no hesitation. If he could read all the letters correctly at sixteen feet, his vision was considered normal and this fact was indicated by marking the fraction $\frac{16}{16}$ opposite his name in the records. If he could read the letters only at six feet, this fact was indicated by the fraction $\frac{6}{16}$. Such an eye, of course, would be subnormal and probably near sighted. If the pupil could read the letters at twenty-four feet, this fact was represented by the fraction $\frac{24}{16}$ showing that the eye was subnormal and far sighted. Having determined the distance at which one eye could read the letters, I repeated the same process with the other eye.

Immediately after each pupil was tested with the alphabet cards, he was tested with the "illiterate E" cards by the same general method, except that instead of naming the character the pupil was required to point in the same direction,—up, down, right, or left,—that the E pointed. In this case, as with the letters, a single error was taken to indicate that the pupil's vision was not sufficiently acute to read the characters at that particular distance, and he was required to move up until he reached the point at which every character could be read correctly.

The time taken by the pupils to recognize the letters varied considerably. It took some pupils three or four seconds to recognize some of the letters, but the average time for each letter was a little over a second. A pupil was allowed to study over one letter three or four seconds, only in case he named the others correctly and rapidly. Some pupils recognized the letters in one-third the time taken by others in the same grade. As a rule, the pupils of the lower grades responded much more slowly than did the pupils of the higher grades. I often found it necessary in all the grades, especially in the primary grades, to allow the pupils to rest their eyes. Many eyes after trying to read half a dozen letters would be filled with tears, which probably indicated weakness of the ocular muscles.

Before beginning the test each day, I tried the cards myself to see whether the light was satisfactory. Usually the best light for presenting the letters was found at the rear of the room. This position prevented the pupils in the room from seeing the letters and becoming familiar with them. All of the pupils could have heard all of the letters named by the one who was being tested, but as their attention was required by the recitation, few of them could follow the pupils as they named the letters. Even if they had heard every letter named, it could have helped them but little,

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for the letters were called wrong almost as often as right, and those tested last showed no improvement over those tested first. Some pupils could see the letters so far that it was necessary to place them out in a hall, or in another room, wherever conditions permitted it.

Many pupils educated themselves very rapidly in the recognition of the letters, especially the "illiterate E." It was not an uncommon thing for a pupil to have to move up to twelve feet in order to make out the direction of the E; but having once clearly seen it, he could recognize the other directions with apparent ease at twice the distance.

The results of this test are presented in the table on page 179, which gives the number of eyes examined in grades I to VIII, with the distances at which the alphabet and illiterate characters could be distinguished. Four hundred and seventy pupils, or 940 eyes, were examined. These pupils were distributed throughout the grades as follows: 72 in the first grade, 54 in the second, 39 in the third, 28 in the fourth, 41 in the fifth, 29 in the sixth, 130 in the seventh, and 77 in the eighth. Of these pupils, 344—those in grades III to VIII, inclusive—were tested with both the alphabet and illiterate characters. In the column headed, Totals III to VIII, may be found the figures affording the most ready comparison of the results with the alphabet and illiterate cards. Thus, with the alphabet characters, the largest number of eyes, 148, distinguished the letters at fourteen feet; the next largest number, 128, at sixteen feet; and the next largest, 114, at twelve feet. Of the 688 eyes tested, 390, or 56.7 per cent, distinguished the characters at from twelve to sixteen feet. With the illiterate cards, however, these same eyes distinguished the character at a much greater distance, 94, the largest number, at twenty-two feet, 92 at twenty-four feet, and 86 at twenty feet. But a smaller number of eyes, only 272, or 39.5 per cent, distinguished the character at these most frequent distances. The results of this comparative test with the two characters are exhibited in figure 1 on page 181, by Curve I for the alphabet test and by Curve II for the illiterate test.

The pupils of the first and second grades, 126 in all, were tested with the iliterate cards only, because they did not all know the alphabet. Curve III represents the results obtained by testing these 252 eyes with the illiterate cards. Curve IV combines in a single curve the results of the illiterate test with the 470 pupils in all the grades.

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The distances in feet at which the eyes of 470 pupils of the Centennial Grammar School, Trenton, N. J., distinguished the Snellen Alphabet and Illiterate Cards.

Feet	Grade VIII.		Grade VII.		Grade VI.		Grade V.		Grade IV.		Grade III.		Totals III.–VIII.		Gr. II.	Gr. I.	Totals I and II	Totals All Grds.
	Alph.	Illit.	Alph.	Illit.	Alph.	Illit.	Alph.	Illit.	Alph.	Illit.	Alph.	Illit.	Alph.	Illit.	Illit.	Illit.	Illit.	Illit.
0																		
1	1	0	0	0	1	0	0	0	0	0	4	1	6	1	0	4	4	5
2	1	0	0	0	0	0	1	0	0	0	1	4	3	4	0	2	2	6
3	6	1	4	0	0	1	1	0	0	0	3	0	14	2	0	0	0	2
4	2	1	0	1	3	0	1	0	0	0	0	0	6	2	2	3	5	7
5	0	0	4	0	0	0	1	1	0	0	2	2	7	3	0	0	0	3
6	4	5	7	3	2	1	5	0	1	0	7	1	26	10	3	1	4	14
8	5	6	20	4	1	0	0	1	9	1	7	1	42	13	3	6	9	22
10	5	1	39	2	2	3	7	1	11	1	23	4	87	12	4	4	8	20
12	26	2	46	10	6	1	12	4	7	0	17	1	114	18	3	3	6	24
14	43	2	54	21	12	0	22	0	10	2	7	5	148	30	6	3	9	39
16	34	3	45	13	15	2	23	3	10	2	1	4	128	27	11	7	18	45
18	14	17	23	24	8	1	6	4	6	9	6	5	63	60	5	16	21	81
20	3	25	12	40	3	4	3	1	2	7	0	9	23	86	7	8	15	101
22	4	25	4	41	5	1	0	8	0	9	0	10	13	94	10	11	21	115
24	6	28	2	38	0	4	0	4	0	5	0	13	8	92	18	38	56	148
26	0	18	0	21	0	8	0	5	0	1	0	5	0	58	24	18	42	100
28	0	6	0	24	0	2	0	18	0	7	0	6	0	63	6	15	21	84
30	0	1	0	8	0	7	0	20	0	5	0	6	0	47	4	5	9	56
32	0	4	0	6	0	9	0	6	0	3	0	1	0	29	2	0	2	31
34	0	3	0	4	0	4	0	5	0	4	0	0	0	20	0	0	0	20
36	0	6	0	0	0	2	0	1	0	0	0	0	0	9	0	0	0	9
38	0	0	0	0	0	4	0	0	0	0	0	0	0	4	0	0	0	4
40	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	2
42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	2
Total No. of Eyes	154	154	260	260	58	58	82	82	56	56	78	78	688	688	108	144	252	940

Curve I. Curve II. Curve III. Curve IV.

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Assuming, in accordance with the principles of Snellen's construction, that the characters could be read by the normal eye at sixteen feet, we are obliged to conclude that only those eyes are normal that read the characters at just sixteen feet, and that all those eyes are subnormal that could read them at a greater or less distance.

The straight line *a-b* running perpendicularly through the curves is the line of assumed normal vision for all of the curves. If this were correct, then all of the eyes represented by the portion of the curves to the left of this line are subnormal, being near sighted, while those represented by the portion of the curves to the right of this line are likewise subnormal, being far sighted. Thus we obtain the following results:

	Eyes normal.	Eyes near sighted.	Eyes far sighted.
Curve I (alphabet test)...	128 or 18.6%	453 or 65.8%	107 or 15.5%
Curve II (illiterate E)...	27 or 3.9%	56 or 8.1%	566 or 82.2%

Taking into consideration the manner in which these tests were made, it is evident at a glance that something is wrong, either with the letters used or with the "illiterate E." It is impossible for both to be correct, because with the "illiterate E" 8.1 per cent of the pupils tested were near sighted and 82.2 per cent were far sighted; whereas with the alphabet test 65.8 per cent of the same pupils were found to be near sighted and only 15.5 per cent far sighted. The fact that only 3.9 per cent of the pupils, according to the illiterate test, had normal vision, and only 8.1 per cent were near sighted, would warrant the suspicion that something was wrong with the "illiterate E." A close analysis of this letter will, I think, prove that the suspicion is well founded. The structure of the E is shown at the right-hand side of figure 1.

A pupil being tested with this character has only to determine in which one of four directions,—up, down, right, or left,—the opening of the character is directed, and this opening can always be pointed out by observing that this side is the lightest. Each of these characters is constructed in a square which is subdivided into twenty-five small squares. The normal eye is supposed to be able to discern one of these small squares at the same distance that is allowed for recognizing the direction of the character. It will be observed that there are three of these small squares lying together unfilled on the open side of this character. Four of these squares should be discerned at thirty-two feet, if they

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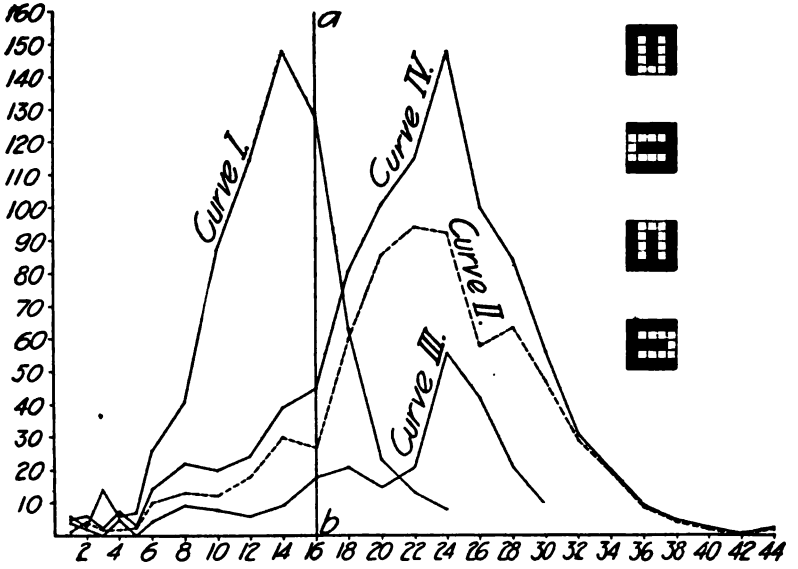
were arranged in the form of a square. It would therefore be reasonable to suppose that these three squares should be seen at about three-quarters of that distance, or twenty-four feet. As a matter of fact, this is exactly the distance at which the largest number of the pupils of all grades (Curve IV), did discern them. I therefore feel justified in saying that the distance at which the



normal eye should discern the character E should be twenty-four feet instead of sixteen feet.

It may be theoretically correct to say that all eyes that could not see the letters on the sixteen foot line were subnormal,—near sighted,—and that all eyes that could see the letters further than sixteen feet were also subnormal,—far sighted,—but this does not mean that all such eyes need the attention of an oculist. I think, however, it is safe to say that all eyes with $\frac{8}{16}$ vision, or less, and all eyes with $\frac{24}{16}$ vision or more, need such attention. Taking these numbers as representing the least degree of deficiency requiring attention, it appears from the table that out of 688 eyes tested, 15.1 per cent, or 104 eyes, may be classed as sufficiently near sighted to need attention, and 1.2 per cent, or 8 eyes, are sufficiently far sighted to need attention.

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The results for each grade are as follows:

Grade.	Eyes tested.	Eyes $\frac{4}{5}$. or below.			Eyes $\frac{5}{5}$ or above.		
3	78	24	or	30 8%	0	or	0 %
4	56	10	or	14.3%	0	or	0 %
5	82	9	or	11 0%	0	or	0 %
6	58	7	or	12.1%	0	or	0 %
7	260	35	or	13 5%	2	or	0 8%
8	154	19	or	12 3%	6	or	3.9%
	688	104		15 1%	8		1.2%

The first and second grades were not tested with the alphabet, but with the "illiterate E" only, as I have said. Assuming that the normal distance for distinguishing this character is twenty-four feet, instead of sixteen feet, we have 56 normal eyes, 76 far sighted, and 120 near sighted. Again assuming, as in the alphabet test, that those eyes which could see the characters at only half the normal distance, twelve feet, or less, need attention, and that those eyes which could see the characters at thirty-six feet or over also need attention, we find that there are 38 eyes, or 15.1 per cent, so near sighted, and none so far sighted, as to need attention.

My experiment proves conclusively that sixteen feet is not the distance at which the normal eye can just discern the "illiterate E." In fact, I found twenty-nine eyes, exhibiting normal vision with the alphabet test, that could interpret these characters at twice sixteen feet, and two of this number could do so at forty-four feet. If this character is used, then a new distance for the normal eye must be determined.

If one finds such variations in test types that are supposed to be accurately constructed, one may, with good reason, conclude that the types and characters prepared by many optical concerns with no guidance as to the principle upon which the letters are constructed, are even more likely to give unreliable results; and if there are such differences in the characters used in testing the eyes of school children in different parts of the country, the published results must be of but little value for comparison.

In an affair of such vital importance to the nation as the testing of its children's eye-sight, there surely ought to be a uniform standard of measurement. It would be well if the Bureau of Education at Washington would take the matter under consideration, and establish a standard that could be registered and protected as are the weights and measures used in commercial transactions.

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REVIEWS AND CRITICISM.

The Dancing Mouse. The Animal Behavior Series, Vol. 1. By Robert M. Yerkes. The Macmillan Company, 1907. Pp. xxi+290.

In this book the author not only presents the results of his own investigations on the dancing mouse, but he also tries to give as complete an account of this animal as possible on the basis of the literature. The dancing mouse has received this name for its curious capacity in the execution of quick, graceful, bizarre and oft-repeated movements, which are somewhat similar to our way of dancing. These mice are frequently kept as pets and they are, as the author says, inexhaustible sources of amusement as well as invaluable material for studies in animal behavior and intelligence. The dancer did not make its appearance as an object of scientific study before 1890. Naturally considerable interest was taken in the origin of this race, because the animals by their peculiar movements are unfit for the usual conditions of mouse-existence, so that they are thrown on human care. It can not be definitely settled when and where the race originated; very likely it is several centuries old.

The dancers are imported from Japan, where they are known as Chinese mice. From this one may conclude that the race originated in China, although nothing definite could be settled by historical research. The variation is now firmly established and breeds true to its type, so that one cannot call it pathological, although there is evidence that dancers appear sometimes among common mice.

After some remarks on the feeding, breeding and development of the animals, the author proceeds to give the results of his study of the dancing movements. It is curious to note that the previous investigators disagree in their descriptions of the movements of the dancer, although this is the most striking feature of the behavior of these animals. By observing the movements of a large number of animals at regular hours of the day the author found that the activity of the dancer increases steadily from the morning to the evening, when it reaches its maximum, and there exist large individual differences as to the execution of the dancing movements. There are three kinds of dancers: those which whirl almost uniformly to the right, those which whirl to the left, and those which whirl almost as frequently in one direction as in the other. It seems that there might be some sex differences in this respect, the males being more frequently left whirlers, whereas the females seem to be more frequently right whirlers; the evidence, however, is not conclusive. The author remarks justly at the end of this chapter, that one of the most interesting results of his study of the movements of the dancer is the fact that in even so simple a matter the truth cannot be discovered except by long and careful observation, and that the method of getting knowledge of the

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behavior of animals by impressions, verified by a few observations, is worse than valueless.

Chapters IV and V contain a study of equilibration and dizziness in the dancer and of the relation of these phenomena to structural facts. Besides the dancing movements the following peculiarities of the dancer demand an explanation in terms of structural facts: restlessness, and quick jerky movements of the head; lack of responsiveness to sounds; greater or less deficiency in equilibration and orientational power; lack of visual dizziness and lack of rotational dizziness. It seems very natural to refer these facts to structural peculiarities of those portions of the body which are supposed to control movements and to be the cause of the phenomena of dizziness and of the ability to perceive sounds, *i. e.*, to some deviation from the type of the mammalian ear in the structure of the semicircular canals and of the cochlea. A considerable amount of time has been spent to establish a significant difference of these organs of the dancers from those of the common mice. The discussion of the results obtained by Rawitz, Panse, Baginski, Alexander and Kreidl, and by Kishi, shows that no structural peculiarity was discovered which accounts satisfactorily for the behavior of the dancers. There is no doubt that the peculiarities of the behavior are caused by some structural differences, but it is certain that they cannot be accounted for by differences in the sense organs alone, and it seems to be doubtful whether they can be accounted for in terms of the structure of the peripheral and of the central nervous system. The author comes to the conclusion that the structure of the entire organism will have to be taken into account.

The next chapter gives the author's own investigations on the sense of hearing of the dancers. The results of previous investigations seem to have shown almost without exception that the dancers lack the sense of hearing. Those experiments, in which reactions of the dancer to sound stimuli were observed, are open to criticism in so far as the possibility that the mice did not react to other stimuli was not excluded. A close study of the animals shows that the adult dancer is totally deaf, but the young dancer perceives sounds for a few days of the third week of his life. Shortly before this period the young dancer becomes very excitable and pugnacious.

Chapters VII-XI are devoted to the study of the sense of sight of the dancer. These chapters cover 108 pages, or almost one-half of the book, and they contain exclusively the results of the author's experiments; references to the literature are given only when it is necessary to define the relation of the author's results and conclusions to those of previous investigators. The results refer to brightness vision, to color vision and to the role of sight in the daily life of the dancer. The labyrinth method was used with the greatest advantage. The dancer's tendency to avoid disagreeable external conditions, its need of space to dance freely and its abundant activity make this animal extremely fit for study by laboratory methods. The author expresses the view that the dancer may take the same part in comparative psy-

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chology as the frog in physiology. The labyrinth method as used by the author differs in one respect from all previous experiments with the labyrinth, in so far as punishment instead of reward was used as the chief motive for the proper performance of the required act. The punishment applied was a slight induction shock. This method is not only less cruel, because it avoids subjecting the animals to extreme hunger, but it is also more effective, because a hungry animal is in a state of discomfort and it is impossible to keep the conditions even fairly constant. The results of the experiments on vision show that the dancer possesses the ability to discriminate brightness differences of reflected light as well as of transmitted light, but that it has not a color sense like ours. The animal probably discriminates colors of the red end of the spectrum from those of other regions by differences in the stimulating value of light of different wave lengths, red having a very low stimulating value; the stimulating effect of different wave lengths for the dancing mouse is radically different from that of different wave lengths for the human eye. The retina of the dancer is reported to contain only one type of retinal element, but no details on this point are given. The role of the sense of sight in the life of the dancer is not very great; movement and differences in brightness are the only visual conditions which to any considerable extent control the activity of this animal.

The rest of the book deals with the question of how the dancer may profit by experience, and with problems which are related to this question. It contains interesting remarks about the different methods of training and about their efficiency. One chapter gives some observations on the question of relearning; an acquired habit it lost only gradually, and even after a very long interval the process of relearning requires less time than the original acquirement of the habit. Chapter XVII describes some observations on individual, age and sex differences; this investigation is not completed because in the course of the experiments almost all the animals were lost by disease. The last chapter contains some remarks about the inheritance of forms of behavior; the author comes to the conclusion that there is no evidence of an inheritance of acquired habits.

For the student of human psychology two parts of the book are of special interest: the chapter where the author discusses the results of the anatomical observations on the ear of the dancer, and the one where he describes his "Weber's law experiments." The observations on the peculiarities of the dancer were put to a very interesting use by Cyon, who used them as a basis for his theory of space. This physiologist remarked several difficulties in the definitions of space, among them the difficulty of finding a reason why we conceive space as three-dimensional. Cyon gives the answer that the source of this difficulty is the fact that space is a sense quality and therefore indefinable, just in the same way as blue or red is indefinable. He then proceeds to find the organ of this sixth sense, and chiefly on the basis of some observations on the abnormal structure of the ear of the dancer he comes to

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the conclusion that the semicircular canals are the organ of this sense, and that we conceive space as three-dimensional, because the three dimensions of space correspond to the three canals. Since the appearance of Yerkes' book another article of Cyon has come out in which the author continues the building up of his theory, and one may expect the publication of a full account of his theory in the near future. Many of those who are interested in the theory of space have not an opportunity to follow the development of physiological and anatomical questions, and Yerkes' excellent account will be very welcome to them. Cyon's theory is very ingenious, and for this reason it is important not to forget that it rests only on a meagre empirical basis.

The chapter on Weber's law is probably the least satisfactory in the book. In these experiments the mice were trained to recognize a box which was distinguished from another only by a different intensity of light. The smallest difference of intensity where an effect of the training could be observed was taken for the just perceptible difference. The difficulty consists in defining what an effect of training is. The results of the experiments are given in figures which show how many times a certain event occurred in a total number of cases. The question arises when do these numbers indicate an effect of training? This question, by its very nature, cannot be answered definitely without laying down an arbitrary limit, because the numbers of relative frequency would show some variation also if the experiments were repeated under exactly the same conditions. It is doubtful whether the question as to the applicability of Weber's law for animals can be answered at present, and it does not seem that the author materially advances the problem by his results, chiefly because of the lack of an adequate definition of a just perceptible difference for experiments with animals. The sober attitude of not asking a question which cannot be answered by our present means would seem to be in better agreement with the general spirit of this excellent book.

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NEWS AND COMMENT.

Dr. John H. Musser, Professor of Medicine at the University of Pennsylvania, recently held at his residence in Philadelphia a meeting for the consideration of the organization of social work in connection with dispensary practice. To this meeting he invited representatives of the various departments of the University Hospital, Miss Marion E. Smith, superintendent of the hospital, a representative of the department of psychology at the University, a representative of the department of sociology, and representatives of the University Settlement. Those present listened to the account given by Miss Ida M. Cannon, of Boston, of the social work department of the Massachusetts General Hospital. Dr. Musser has already obtained one assistant, who will visit cases in their homes, give lessons in hygiene, cooking, etc., and endeavor to carry out the directions of the physicians. It is his desire to organize a corps of social workers, in part made up of students of sociology and psychology, and working in conjunction with the University Settlement for the district in which the settlement is located. It is probable that this work, which is thus being begun under Dr. Musser's influence, will increase in importance very rapidly.

Such has been the history of the work established at the Massachusetts General Hospital through the efforts of Dr. Richard C. Cabot. The first annual report was published only last year, but in that report the staff for social work includes a general secretary and assistants, a volunteer teacher of hygiene, nine volunteer assistants at the out-patient department, and five paid assistants outside the out-patient department. There is also a large suburban tuberculosis class organized with two physicians in charge, with a large number of volunteer visitors and several paid assistants. In addition to the work in the tuberculosis class, social work has been organized to include the teaching of hygiene in the many cases where this is necessary; demonstrations and directions to mothers on infant feeding and the care of delicate children; the providing of vacations and country outings for those who need them as part of their treatment; the care of unmarried girls who are pregnant, morally exposed, or feeble-minded; help for patients needing work or a change of work; provision and provisions for patients "dumped" at the hospital; assistance to patients needing treatment after discharge from the hospital wards. In administering general relief, the social work department endeavors to make available for its patients the resources of the charitable organizations already in the field, and undertakes relief on its own account only in those cases for which no proper or adequate disposition can be found.

The socialization of medicine presents an important problem, analogous to that of the socialization of education, for which THE PSYCHOLOGICAL CLINIC is a spokesman. Miss Cannon emphasizes the fact that what dispensary patients need is education quite as much as medical treatment. The social workers connected with the Massachusetts General Hospital have outlined a plan of education in the proper mode of living and in the care of the sick. For the socialization

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of education we need first to instruct teachers that the educational problem is only part of a larger social problem, and then to win their interest to assist in working out a solution.

Asheville, N. C., is about to organize a class for truants. Superintendent R. J. Tighe is looking for a suitable person, preferably a man, to take charge of this first class. It is probable that the work will extend to backward children, as this has been the history of such work in other cities.

The psychological training school, or hospital school, seeks to obtain one or more student assistants. The assistant will live at the school and receive instruction in psychology, in nursing, and in special work with backward children, as part compensation. Those who graduate from the hospital school as trainers of backward children should be able to obtain for the training of private cases the compensation of trained nurses, in the neighborhood of one hundred dollars a month and expenses. The work is of a character to recommend itself to college graduates who require financial assistance while pursuing graduate work in psychology or sociology. Inquiries should be addressed to Dr. Lightner Witmer, University of Pennsylvania, Philadelphia, Pa.

Dr. J. Carleton Bell, Instructor in Experimental Psychology, Wellesley College, has been appointed to take charge of the new psychological laboratory in the Brooklyn Training School for Teachers.

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The Psychological Clinic

VOL. I. No. 7. DECEMBER 15, 1907.

A CLINICAL EXAMINATION BLANK FOR BACKWARD CHILDREN IN THE PUBLIC SCHOOLS.

BY J. D. HEILMAN,

University of Pennsylvania.

Children begin their public-school life at different ages, some as early as five, others not until eight or older. Even where education is compulsory, the age of entrance will frequently be above that prescribed by law. This is due in part to an evasion of the law and in part to ill-health and the influx of a foreign population. Nevertheless, the majority of children are under seven years of age when first entered upon the enrollment records of the public schools.

It is the aim of the schools to have each child do the work of one grade in a single year, so that if a child enters the first grade at the age of six years he should, if the school succeeds in its purpose, begin the work of the second grade at the age of seven years; of the third grade at the age of eight and so on through the grades. The schools, however, do not succeed in realizing this ideal scheme of progress. A very cursory examination of school reports or enrollment records will reveal the fact that there is a large number of children in the public schools who must often have failed to make the necessary promotions.

From the analysis of the enrollment figures of the Camden schools for 1905-06 it appeared that about 2,000 public school children, or 26⅓ per cent of the entire number, were retarded, meaning by *retarded* those children of the first grade who were nine years old or more, of the second grade those who were ten or more and so on. A realization of the extent of this retardation led Mr. Bryan, the city superintendent, to study by means of a statistical inquiry the conditions producing it, and also to consent to a clinical examination of the 2,000 children whom his statistics showed to be retarded. This examination was carried

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No. Name

Grade Class 190 Address

Grade Class 190 Address

School 190 Teacher

School 190 Teacher

Progress E G F D vD Date of birth Age

Conduct E G F D vD Age on entering school No. years in school

Attendance vR R I vI A School history (Rel)

Most deficient in

Best in

Habits

Father living dead

Mother living dead

Step-father, Step-mother

Nationality F.

" M.

Birthplace

Lives with

Home Lang.

Older brothers living dead

" sisters " "

Younger brothers " "

" sisters " "

Eye, R. }
Eye, L. }

Defects

Disease

Ear, R. }
Ear, L. }

Defects

Disease

Co-ordination 5 4 3 2 1

vB Bold Norm Shy vS

Am Resp Pass Sull Sur

Sto In Al Nerv vN

vR Refl Norm Imp vI

Stu Wilf Firm Flex Vac

Stammer (inf) 5 4 3 2 1

Stutter 5 4 3 2 1

	5	4	3	2	1		5	4	3	2	1
Normal	vG	G	M	Sl	D	Deficient	Bkw	IH	IM	H	Id
Health	vG	G	F	P	vP	Home Care	vG	G	F	P	vP
Nutrition	F	G	M	P	St	" Culture	vG	G	F	P	vP
Support	R	W	M	P	vP	" Discipline	vG	G	F	P	vP

Occupation of provider

Child works at

	Anormality	Asymmetry
Trunk		
Arms		
Legs		
Hands		
Feet		
Cranium		
Forehead		
Face		
Ears		
Eyes		
Nose		
Lips		
Palate		
Tonsils		
Naso-ph'nx		
Mth Breathg		
Teeth		
Tongue		
Voice		
Speech		
Diseases		

Filled in by .....Date .....

Laboratory of Psychology, University of Pennsylvania.
The J. Lewis Croser Fund.

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on by me during the second half of the school year 1906-07. Its object was to discover the social, educational and other factors which delayed the normal progress of the child.*

In order to facilitate this investigation and to secure data that were relatively uniform and of scientific importance, the first task was the preparation of a suitable blank. I propose to describe and analyze this blank in the hope that it may prove of service to others who may contemplate the preparation of a blank for a similar investigation. The blank is of such a character that it may also serve as a model to teachers who are persuaded of the utility of keeping a permanent record of each child. Such a record, revised each year and sent with the child as it is promoted or transferred from one school to another, would more than repay the teacher for the time devoted to making the records. To do this work properly, presupposes on the part of the teacher, a knowledge of the individual child which is really indispensable to its proper discipline and instruction—a knowledge, however, which many teachers lack. The required use of this blank will go far towards compelling the teacher to gain this necessary knowledge. A case presents itself to my mind which forcibly illustrates how children may be made to suffer on account of the ignorance of the teacher. This was a girl, nine years old and in the first grade. She did very poor work and had little promise of being promoted. The mother was very urgent in demanding that her child should be promoted at the close of the term. Partly owing to the parent's insistence and partly in consequence of a school regulation, this poor child, who was a microcephalic imbecile, was detained an hour or more almost every day after the regular school session in order that she might study her lessons. On further inquiry, I discovered that no matter how much time the child devoted to her lessons, she learned nothing.

The keeping of such a record would do more than benefit the teacher and the pupil. Properly made and preserved, these records would constitute a repository of data, upon which to build generalizations of the utmost significance to the school system and all connected with it, whether in the capacity of patron or pupil, teacher or supervisor.

All the items of the blank, which is reproduced in actual size on the page opposite, may be classified somewhat roughly into three groups: one group pertains to the child in the home,

*This investigation was conducted on the J. Lewis Crozer Fund, provided by Mrs. Crozer as a memorial to her husband and to further the scientific study and remedial treatment of backward children.

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the blank no space was allowed for truancy and a number of other important facts, because they are of relatively infrequent occurrence, and a note on the back of the blank involves very little time and effort.

The card of John Smith, reproduced on page 218, records his progress and conduct as very deficient; attendance, however, is regular. He entered school at six years of age, and at the time when this blank was filled out, June 4, 1907, which may be seen from the bottom of the card, he had been in school one year and was at that time seven years of age. His school history shows that the work of the year was done in the school in which he was found at the end of the year.

We therefore see that we have a record of deficient progress which is not explained by irregularity of attendance, nor by entering school late, and which is either associated with or caused by deficient conduct. When next we look at the grading of mentality, we find that he has been placed in the group of those having deficient mentality and that he is classed as a backward child.

The ratings of progress, conduct, attendance and mentality, which have been considered, are indicated by a check mark over the symbol of the reported grade of the respective quality. This is an easy symbol to make, and the saving of time is an important desideratum. If I dissented from the teacher's judgment with respect to any item of the blank after having examined the child, I noted the fact by drawing a horizontal line through the symbol of the grade in which I placed him. Thus, if I had considered this boy a high grade imbecile, the blank, in addition to the check mark through Bkw, would have had a horizontal line through IH. The marks employed are immaterial, but it is important that they should be made as quickly as possible and should be easily distinguished in the subsequent collation of the data of the blanks.

We now see that we have to do with a backward child of normal age in the first school year, who has been regular in attendance throughout the year, but whose conduct is reported as very deficient. Is his backwardness the consequence of deficiency of conduct? Is it the result of school conditions? Has it followed upon the home environment? Or is it based upon structural defects, or inheritance?

Directly below the entry of the child's mental grade is found a group of items relating to the child's environment. His health

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is reported as *fair*, nutrition *poor*, support *poor*, home care *poor*, home culture *very poor*, and home discipline *very poor*. There can be very little doubt that the progress of a child in school, independent of any physiological backwardness, is the result of these various factors. Even physiological backwardness may be augmented, and probably caused, by the associated activity of a number of unfavorable environmental conditions. The extent to which these factors are associated with different degrees of mentality as revealed through school work, is one of the subjects of my investigation.

In employing this blank, the general health of the child is to be recorded as *very good, good, fair, poor,* or *very poor*. The record is based upon such judgment as a teacher or parent would give. It is not a report such as a medical examiner would make. The object is to find to what extent the child's health interfered with his attendance at school or with his performing daily tasks, even if he were in actual attendance. It does not propose to record the existence of actual disease. If the child is found to be suffering from some special disease, this is to be reported in the space provided at the bottom of the blank after the word *diseases*. Here also are to be recorded such children's diseases as the child may have suffered from in the past. When facts worthy of special note are discovered in this connection, they are to be recorded on the back of the blank.

Poor health may not only cause prolonged or repeated absences, and so indirectly retard the child: it often interferes with vigorous mental action, and is a predisposing cause of fatigue. When fatigue is readily produced, sustained attention, which is so essential for mental acquisition, becomes practically impossible. Many physical ailments are a continual source of irritation to the nervous system, not only because they produce a condition of *malaise*, but because they withdraw attention from the lesson to the source of excitation. The connection between good health and the attainment of the objects of school instruction is so close that school systems are awakening to the need of physical directors and medical inspectors to look after the physical welfare of the children. Mental, and often moral, deterioration may result from prolonged ill-health.

The nutrition of the child is also to be recorded on the basis of general observation, rather than a physician's examination. The five classes, in one of which the child's nutrition may be recorded, are indicated by the letters F, G, M, P, and St, which

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stand for the words *fat, good, medium, poor,* and *starved,* respectively. Faulty nutrition retards the child's progress, whether it is due to disease or to improper and insufficient diet. If no positive knowledge of the diet can be obtained, the rating of nutrition may be based upon certain signs to be observed in the child. After the item *habits,* in the blank, I usually recorded such facts as I could obtain concerning the child's diet. Thus, John Smith's nutrition is recorded as poor, and after the word *habits* occurs the formula, "1. Coffee + bread & cake; 2. Beer, 3. Tea." This means that the child's usual breakfast is coffee, bread and cake; that he drinks beer at dinner and tea at supper. In this case it would appear that the poor nutrition was probably due to insufficient and improper diet. This condition is one which I have found in a very large number of the backward children whom I have examined.

The child's color may be employed to assist in determining his nutritional status, for paleness is an effect of either an insufficient supply or an impoverished state of the blood, due to a lack of oxygen or the proper kind and amount of food materials; but lack of color must not be mistaken for a light complexion as shown by the color of the eyes and hair, nor must a dark complexion be interpreted as an absence of paleness.

Paleness may be due to a blood disease called anæmia, and when this is the case, the skin will remain permanently pale without change of color. The color of the lips, and changes of color in the finger nails when subjected to pressure, may also be observed. If this change of color upon pressure is not very decided, it may be taken as a sign of poor nutrition. If the return of color upon removal of the pressure is slow in appearing, it indicates vaso-motor disturbance.

Other important signs of poor nutrition are emaciation, and deficient weight in comparison with height. Disproportion among the several members of the body may indicate defective nutrition at some period previous to the time of examination. Signs of defective nutrition during the early period of rapid development previous to the second year, may be observed in teeth, ears and in other developmental defects. These, however, are not to be taken into account in this connection, excepting in a general way. They will be entered under *anormalities* and *asymmetries* of the bodily members.

If the financial support of the child in the home is poor, it is likely that poor nutrition is the result of insufficient diet. If

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the support is ample, poor nutrition is more likely to be due to physiological conditions, and to be associated with ill-health. The support which the child receives at home is entered as *rich, well-to-do, medium, poor,* or *very poor.* The financial condition of the family not only militates against the child's health and nutrition, and so causes retardation: it becomes a direct cause of retardation owing to the fact that many children are kept from school to assist in eking out a livelihood for the family. Many children in Camden leave school about the middle of May to engage in some kind of occupation. This is especially true of the Italian children, who leave school about a month and a half before the close of the term to obtain employment as berry-pickers. Moreover, in my investigation there appeared to be some families so afflicted with ill-health and poverty that they would have to depend upon charity for their subsistence if they sent their children regularly to school. Poverty becomes a direct cause of retardation when it is so extreme as to prevent the family from supplying proper and sufficient food, clothing and housing. The nurture of thousands of children in our large cities is the direct cause of adult inefficiency.

Home care, home culture, and home discipline are usually directly correlated with the financial status of the family, though there are many exceptions to this rule. Home care is rated as *very good, good, fair, poor,* or *very poor.* The cleanliness of the child's person and clothing is the best indication of home care. The vitiated air in which many of our teachers and children are immersed day after day, has its origin not only in the poisonous products of the breath, but also in the children's clothing, which is often soaked with filth. It would surprise any investigator to learn how many parents adopt the convenient custom of "sewing up" their children for the winter. As the cold weather increases, the number of garments increases, and as the weather moderates the garments diminish. During this entire period the clothing worn next the skin is unchanged, and may be neither washed nor aired for months. This filthy condition not only militates against the child's well-being, but interferes with his progress in school, because these children are repulsive to most teachers.

Insufficient clothing makes it difficult for many children to maintain health and keep in daily attendance. I was informed by the principal of one of the Camden schools that there had been a marked improvement in attendance upon supplying the poorest children with the cast-off clothing of those in more fortunate circumstances.

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The overcrowding of a family into one or two rooms, the result of insufficient financial support, is also a frequent factor in reducing home care and home discipline to a minimum.

By home culture is meant the degree of mental development and refinement attained by the family. If the child has an intellectual, moral, and emotional environment of high grade, his school progress is favored by it. The conception of culture is not very definite, nor is it easy to estimate the different grades of home culture. I asked the teachers to base their judgments on the kind of literature read in the home, on the parents' occupation, and the content and modes of conversation. In the determination of the culture level, as well as of other facts about the home, the child himself very often serves as a satisfactory index.

The relation of home culture to school progress is not to be settled off-hand without a careful inquiry. Children from the homes of very ignorant parents often stand high in their school work, but intellectual standing is not the whole of culture. Where the moral element is prominent, the members of a family live a life of duty and self-restraint and effort, whether at home or in school. This, of course, means application and discipline that develop habits of work and attention so necessary for school progress. Lack of moral training in the sense of absence of proper home discipline is a frequent cause of lack of industry, application, and concentration of attention. I consider the item of home discipline one of the most important determining factors of school progress. A well disciplined child will always be amenable to the directions of his teacher and the regulations of the school. On the other hand, a child may manifest good moral conduct, may give no trouble in school, and yet may lack the essentials of discipline. In explanation of the deficient progress of John Smith, I consider the rating of home discipline, *very poor,* as significant. In his case, it also resulted in deficient conduct.

We now know something of this boy's environment. He is the offspring of parents who are living in poverty (his father is a presser, a tailor's assistant), unable to supply his body with sufficient food, though not requiring him to work as yet, unintelligent enough to furnish him with beer, tea and coffee, unwilling or unable to accord him satisfactory care of body and clothing, low in the scale of culture, and incapable of supplying the mental and moral discipline, the lack of which is probably evidenced in his retarded progress and deficient conduct.

In the lower left-hand corner of the blank are a number of

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items of great interest in determining the general physical aptitude of the boy, as well as certain traits of character which stand in close correlation to the manifestation of intelligence. Does the boy show good motorial *co-ordination?* The check mark stands over the number 3, which gives his co-ordination a rating of *medium.* We learn little from this that throws light on the association of motor with intellectual deficiency, but from a large number of cases we may see whether boys deficient in intelligence more often manifest good co-ordination, poor co-ordination, or medium.

It is impossible to give in this place an extended discussion of the factor of co-ordination. A few words in regard to it will have to suffice. Co-ordination may be defined as the ability to accomplish by means of muscular contractions and with the least possible expenditure of energy, a definite purpose or assigned task. It means more than the simultaneous or successive synergy of two or more muscles or groups of muscles. It requires a delicate adjustment of the muscular innervation necessary to move a member of the body at a given rate through a given distance. There is reason to believe that control of this muscular innervation is dependent upon the will, and that volitional activity is closely associated with mentality.

Several criteria may be employed to pass judgment upon the degree of co-ordination. One is the accuracy with which the task is accomplished. Thus, if a child be asked to move his arm a given distance in a given direction, his co-ordination may be regarded as good if his movement corresponds very exactly to the one required. Judgment of the degree of co-ordination may also be based upon the facility displayed in the accomplishment of an assigned task. In my investigation I employed the following method to rate co-ordination: I threw a number of pegs, about two inches long and one-eighth of an inch in diameter, upon the table and asked the child to pick them up as rapidly as possible, using for the purpose but one hand and holding the pegs in the same hand while he continued to pick them up.

Below the word co-ordination are five groups of symbols and words descriptive of mental and emotional character. Their appearance on the blank was to some extent in the nature of an after-thought. It was not my purpose to determine whether the child was shy or bold, amiable or sullen, stolid or nervous, reflective or impulsive, stubborn or vacillating in will; but it became apparent that shy children are often misjudged. They are apt

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to be under-rated in intelligence and bold children over-rated. Shy and timid children will not do so well in their recitations as the bold and forward. Some children approximating the condition of moral imbecility are extremely forward and bold, and give the appearance of great intelligence, and are therefore apt to be rated high. Teachers are apt to underestimate the capacities of a sullen or surly child, and give too favorable a rating to an amiable one. The child whose thought is characterized by reflection is oftentimes under-rated in comparison with the impulsive child. Moreover, many of these characters have a diagnostic value. Shyness is often associated with deafness, for the semi-deaf child often knows that something is required of him, the exact nature of which he is unable to comprehend. Sullenness is associated with adenoids, as is also stolidity. Nervousness and impulsiveness and vacillating will are symptomatic of impoverished nervous systems. It is also true that these characters exercise a facilitating or retarding effect upon school progress and general mental development. The shy child is not likely to get so much out of the school work as the bold child. The amiable child receives more attention from its teacher than the sullen or surly child. The child who is alert in mentality is more apt to profit by the school environment than one who is stolid or nervous. The child whose will is firm, will do better work than one whose vacillating will produces want of application, or one in whom wilfulness or stubbornness awakens antagonism and negativism.

The choice of words with which to describe mental and emotional character is not an easy one. The words that have been selected for this purpose were chosen after careful consideration. It is possible that different words may recommend themselves to others as being more suitable. The words selected were picked out primarily because they were thought to give an adequate description of a mental character, that is, for the purpose of providing an exact psychological designation, but also to furnish terms familiar to the everyday judgment of the teacher. The terms describe the following five traits of character:—

(1) Social reaction:—boldness or shyness.

(2) Feeling and its expression:—amiability, responsiveness, sullenness or surliness.

(3) General mental and physical activity:—stolidity, inertness, alertness, or nervousness.

(4) Intellectual character:—reflectivity or impulsiveness.

(5) Will or volitional character:—stubbornness, wilfulness, firmness, flexibility, or vacillation.

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I give below various words that may be employed to describe each of the five groups used in connection with each of these five traits of character. The one which is employed upon the blank stands at the top in each case, printed in italics.

Social reaction:				
very bold	*bold*	*normal*	*shy*	*very shy*
insolent	courageous	indifferent	reserved	afraid
impudent	forward	unconcerned	coy	cowardly
impertinent	pert		timid	
	saucy		bashful	
			diffident	
Expression of feeling:				
amiable	*responsive*	*passive*	*sullen*	*surly*
sweet	impressionable	indifferent	sulky	rude
genial	sympathetic	apathetic	cross	gruff
gentle		phlegmatic	peevish	
			morose	
General activity:				
stolid	*inert*	*alert*	*nervous*	*very nervous*
apathetic	inactive	active	eager	excitable
impassive	sluggish	bright	restless	
wooden				
Intellectual character:				
very reflective	*reflective*	*Normal*	*impulsive*	*very impulsive*
meditative	thoughtful	indifferent	thoughtless	rash
	cautious			
Will:				
stubborn	*wilful*	*firm*	*flexible*	*vacillating*
intractable	determined	normal	submissive	wavering
obstinate	headstrong		yielding	unstable
obdurate	refractory		pliant	
unyielding				

It will be seen from the above that the child's social reactions are distinguished as presenting opposite characters of boldness and shyness. Children who present neither character in marked degree are called *normal.* Perhaps it would have been better to describe them as indifferent. Children with an excess of either character are described as *very bold,* or as *very shy.*

Feeling, or more accurately the expression of feeling in the child's reaction to the teacher and other persons of his environment, is characterized as *amiable, responsive, passive, sullen,* or *surly,* for which the symbols Am, Resp, Pass, Sull, and Sur are employed in the blank. The amiable child is characterized by a

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sweetness of disposition which is bound to make friends. Thus, amiability wins a teacher's regard and leads to efficient effort on her part, but amiability in some cases leads to an excess of feeling which is detrimental to the best intellectual work. The child who is classed as amiable possesses a character which is therefore of doubtful value for school progress. On the other hand, the child who is characterized as responsive is easy to work with, sympathetic, and is the most favorably situated child so far as feeling is concerned. The sullen child scowls and pouts, showing ill temper in facial expression but remaining silent. The surly child is more active in the expression of his ill humor, using voice and bodily action to demonstrate its presence. These children are difficult to treat in large classes. Their feelings, unless they are won over by a skilful and good-tempered teacher, are a serious bar to mental progress. The child who is indifferent in the expression of a state of feeling, and in his reaction to the teacher, is characterized on the blank as passive. Passivity may give free play to intellectual effort, and the passive child may furnish a more favorable soil for the teacher's efforts than the excessively amiable child, but feeling is a great stimulus to effort and it is probable that in most cases passivity is a relatively unfavorable soil.

A child's activity, whether of mind or body, may be such that we may characterize him as alert. When present in excess it becomes nervousness. At the opposite extreme is stolidity. For an intermediate grade between the stolid and the alert child, the blank employs the term *inert,* or *inactive.* The five grades are therefore *stolid, inert, alert, nervous,* and *very nervous,* represented respectively by the symbols Sto, In, Al, Nerv, and vN.

With respect to intellectual activity, all children may be divided into three classes,—the sensory or reflective, the motor or impulsive, and those who are neither. The latter group the blank designates as *normal,* though probably the term indifferent or mixed is to be preferred. The impulsive type is distinguished by the rapidity with which it responds to a question or other mental stimulus. This type of child does not stop to think. As soon as an appeal is made to it, there is an immediate response, which is frequently ridiculous on account of immature thought. The reflective type is characterized by relatively slow but intelligent responses. The blank subdivides the reflective and impulsive groups into two sub-groups, in which each quality appears in either a moderate or excessive degree. The blank, therefore, dis-

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tinguishes children as *very reflective, reflective, normal, impulsive,* and very impulsive. The symbols for these words are vR, Refl, Norm, Imp, and vI.

For the classification of the will the blank distinguishes the *stubborn, wilful, firm, flexible,* and *vacillating,* using for the purpose the symbols Stu, Wilf, Firm, Flex, and Vac. These terms are self-explanatory. There may be some confusion, however, of stubbornness with sullenness and surliness. It is true that a defect of will is often associated with a defect of feeling, but I have examined many cases that did not show any ill humor, who yet simply refused to obey all commands.

One other character is of sufficiently general significance to be treated in connection with the items that form the subject of this second article. The most superficial examination of a child will bring from him some utterance. In voice and speech, the examiner or teacher may quickly infer the presence of physical or mental defects. On the physical side the utterance of a single word in answer to a question may awaken the suspicion of naso-pharyngeal obstruction. The treatment of purely physical defects belongs to my next article. In this place, I wish to consider defects of articulation, which are also active factors in causing retardation. Children with defective speech receive low grades in reading, and their intelligence is usually underestimated by the teacher, who attributes much of the speech defect to a lack of knowledge. These defects hinder progress in still another way. Such children are frequently ridiculed by their schoolmates on account of their impediments of speech. In this way they learn to dislike school, lose interest in their work, and become absentees. But more important than this is the effect of defective modes of articulation and phrasing upon written language. Some children with an infantile stammer write school compositions which mirror with great fidelity their habits of oral speech.

Defects of articulation are frequently associated with defective hearing, for a child who is unable to hear words distinctly will be unable to reproduce them properly. Observation has also shown that defects of articulation cause defective hearing of language. Children that appear to be deaf to words, improve when their defects of articulation are cured.

The words *stammer,* and *stutter,* are loosely employed by English writers to designate nearly every defect of speech. A definite meaning should be attached to each. In this blank the

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word *stammer* is employed to cover any defect of articulation, as, for example, the inability to produce certain sounds, or the substitution of one sound for another like *th* for *s* in lisping. A stammer may indicate defective organs of articulation, like a cleft palate, displaced teeth, or a partial paralysis of the tongue. A stammer, however, may simply be the persistence of an infantile speech habit, "baby talk." This retardation in speech may be due to an undeveloped mind, or may be the result of adenoids or other obstruction in the resonance cavity, which may or may not have been removed. If the stammer is an infantile stammer, a check mark is made over the symbol *inf.* The degree of the stammer is indicated by a check mark over one of the five numbers appearing to the right of the word *stammer.*

A *stutter* is characterized by a series of spasmodic hesitations and the frequent repetition of some of the spoken elements. This defect may be acquired by imitation. It may be the result of nervousness, or it may be due to an inability to co-ordinate the movements of breathing with those which control the articulation. Stuttering does not seem to have the same causal relationship to intellectual retardation as does stammering. The blank provides, as with other items, five grades for an estimation of the degree of stuttering.

From the record card on page 218, a blank partially filled in, we ascertain the following facts about the boy John Smith, which cause him to stand out as a distinct personality. He is seven years of age, has been one year at school, where he attended regularly, but where his conduct and progress were both very deficient. He is classified as a backward case, subnormal in intelligence. His co-ordination is only medium. He is bold in his association with his teachers, passive or indifferent in feeling towards them. He shows signs of nervousness. He is neither reflective nor impulsive, and is vacillating in will. We have also learned that while his health is fair, his nutrition is poor, and that he is trying to do his school work on a breakfast of coffee, bread and cake; that he also drinks beer and tea. This insufficient and improper diet, which probably is responsible in large measure for his nervousness, his vacillating will, and his deficient conduct and progress in school, is itself the result of the poverty of his parents, which enables them to give him but poor support in a home that is characterized as of very inferior culture, providing very deficient mental and moral discipline, and inadequate care of his person and clothing.

[To be concluded.]

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THE RELATION OF PHYSICAL TO MENTAL DEFECT IN SCHOOL CHILDREN.

By Walter S. Cornell, M.D.,
University of Pennsylvania.

The age of our race between six and fifteen years is a distinctive one, from the fact that the problem of diet, so important in infancy, decreases with the corresponding increase in bodily activity. So, also, the prevalence and effect of contagious diseases suffer a reduction. For these reasons the mortality rate decreases progressively, and the probability of survival becomes steadily brighter.

The age of development, however, is one in which the subsequent physical and mental welfare is largely predetermined. Though the child's life be fairly safe, his fortune still lies largely in the hands of his parents, his environment, his teacher, and his physician. First must be met the burdens of heredity, producing thousands of sickly, deformed, and neurotic children. A perpetually (or rather, life-long) acting force is here to be combated and reckoned with. Second to heredity is a poor city environment, with its lack of fresh air and its improper diet of canned foods. Exposed to these influences, healthy infants succumb and join the ranks of those already suffering from rickets, anæmia, and adenoid nasal obstruction. Finally, the ignorance of parents causes indifference to the damage already done, and adds premature decay of the teeth to the existing list of evident physical imperfections.

Are these injuries to the health of the child also harmful to his mind? Will he ultimately pass through their pale of influence more or less scarred, but possessing the same knowledge and mental faculty that make for power, as his more vigorous neighbor?

Backward and subnormal children approach so nearly the ordinary child that the connection between physical defect and brain defect is often not demonstrable at all in individual cases.

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In these the acting influences are of minor degree, being principally poor eyesight, deafness, and poor nutrition (adenoid growths are included in the latter two). We may either assume that the rule of a sound mind in a sound body is a natural law, and so reason by analogy that it operates in these cases, or by a study of a large series of cases draw positive original conclusions from this very class itself. The latter is well worth proving, if it be possible to do so.

In the special classes for backward children conducted by our large cities, the reports show that almost every backward child exhibits physical defect of some sort. In these classes the proportion of defective children is given by one authority as 95 per cent of the whole number.

That the physically defective among ordinary school-children show subnormal mentality is the converse of this proposition and should be capable of demonstration.

In the following investigation I have endeavored to clearly establish this relationship. The children studied were those of three Philadelphia public schools, whom I had previously physically examined in prosecution of the official work of medical school inspection.

The first step was the recording, in each school, of the name, physical record, and scholarship of each child. The last mentioned datum was obtained by using the previous term-marks in three of the school studies, from which an average mark was easily calculated.

The average term-mark of the whole school was first obtained by the simple process of adding the term-marks of all the children together, and dividing by the number of children. For example, in the Claghorn School this was 73.1.

The record-cards of the children were then divided into two collections: one of the healthy or normal children, the other of the general group showing some noteworthy physical defect. The average term-mark (the scholarship index) was then calculated for each group separately, and the two compared, first with each other, and then with the term-mark of all the children previously calculated.

The results showed that in each school, *and in each individual branch of study in each school,* the healthy or normal children stood higher in their classes than the average children, and the physical defectives, taken as a class, stood lower than the average children.

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ALLISON SCHOOL—219 CHILDREN, BOTH SEXES, 6 TO 12 YEARS OLD.

	Average
Normal child	75
Average child	74
General defectives	72.6
Adenoids and enlarged tonsils	72
Deaf	67.2

NINTH STREET PRIMARY SCHOOL—84 CHILDREN, BOTH SEXES, 6 TO 10 YEARS OLD.

	Language	Arithmetic	Spelling	Average
64 cases normal children	72.9	75.5	75.4	74.6
84 cases average children	70.5	74	72.8	72.4
21 cases general defectives	63.3	70	64.8	66
8 cases adenoids	60	66.7	65	63.9
No cases deaf.				

CLAGHORN SCHOOL—252 CHILDREN, BOTH SEXES, 12 TO 15 YEARS OLD.

	Language	Arithmetic	Geography and History	Average
179 cases normal children	74.4	72	76.6	74.3
252 cases average children	72.7	70	76.5	73.1
73 cases general defectives	71.4	65.1	76.2	70.8

An investigation on slightly different lines was made possible by the existence in the Claghorn School of four classes of the same grammar grade, which had been so made up at the beginning of the year that the brighter children constituted two classes, and the duller children the other two classes. The latter were smaller, so as to afford more opportunity for individual instruction. A comparison of the physical condition of the children is instructive:

	Class 1	Class 15	Class 9	Class 11
	Bright Children		Dull Children	Dullest Children
Number of children	50	39	32	29
Normal	36	32	20	13
Defective	14	7	12	16
Percentage of normal children	72%	82%	62.5%	44.8%

In June, 1906, the school medical inspection corps of Philadelphia was directed by its chief, Dr. Thomas J. Beatty, to make a comparative study of those bright children exempted from their annual examinations, and those children whose lower scholastic standard necessitated their examination for promotion. The proportion of physical defects recorded in the two groups was made the basis of comparison. I am indebted to Dr. Beatty for per-

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mission to publish the figures which I submitted to him at that time. It will be observed that, on averaging the five schools, the brighter children showed the lower percentage of physical defect.

	Exempt Children Normal	Exempt Children Defective	Non-Exempt Children Normal	Non-Exempt Children Defective
Ninth Street Primary School	56	28	39	38
Rutledge School	87	35	75	34
Allison School	128	65	81	49
Camac School	183	71	103	75
Claghorn School	193	61	127	66
	647	260	425	262
Percentage defective	28.8 per cent.		38.1 per cent.	

An effort was made to determine the exact degree of influence of defects of the nose and throat. The harmful results of these have been recognized in recent years. In the Claghorn School the four classes of bright and dull children were examined again. Their eyesight proved to be about the same (averaging $\frac{5.26}{6}$, $\frac{5.41}{6}$, $\frac{5.3}{6}$, $\frac{5.08}{6}$). Enlarged tonsils, adenoids, deafness, and nasal catarrh occurred much more frequently, however, among the two classes of duller children. In many the adenoid expression was written only too plainly on their faces. The following table shows the findings:

	Class 1 Bright Children	Class 15	Class 9 Dull Children	Class 11 Dullest Children
Number of children	50	39	32	29
Nose and throat conditions:				
Number defective	6	4	9	9
With single or combined defects, viz:				
Tonsils	3	4	3	3
Adenoids	2	1	5	6
Deaf	2	..	5	1
Catarrh	..	..	2	3
Percentage of children with nose and throat defects	12%	10.2%	28.1%	31%

The conclusions to be drawn from the foregoing facts are very evident. The educational result in our public schools suffers a discount of about 6 per cent in the case of the physically defective children, as well as a waste of the time rightfully belonging to the normal children. The drain on the teacher's energies is more than proportionately increased by the presence of such children, because of their associated nervousness or stupidity.

NOTE.—This article is from a chapter of a book in course of preparation, entitled "Medical Inspection of School Children."

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Youth: Its Education, Regimen, and Hygiene. By G. Stanley Hall, Ph.D., LL.D., President of Clark University and Professor of Psychology and Pedagogy. New York: D. Appleton & Company, 1906. x + 379 pp.

President Hall has rendered a great service to the many teachers interested in his work and opinions, by culling from the exhaustive treatise on "Adolescence" the data and conclusions which he considers of the most practical pedagogical value. With the exception of the last chapter on moral and religious education, "Youth" is a repetition and rearrangement of certain parts of the larger work. The more technical portions are omitted, as well as much that is interesting chiefly from the poetic or emotional standpoint. Enough of the latter remains, however, for President Hall throughout the smaller as well as the larger work makes quite as strong an appeal to emotion and sentiment as to the scientific spirit.

Though President Hall has recognized the necessity for simplification in this popular edition of the two volume treatise, he evidently could not quite bring himself to sacrifice all of his characteristic and sometimes unique verbiage on the altar of simplicity. He has, however, compromised by adding a glossary for the explanation of such terms as rabulist, chrestomathy, ephebic, eviration, paleopsychic, and temibility.

Hall's basic theory of education is that at every stage of a child's life the environment and instruction should be closely adapted to the degree of the child's mental and physical development. This ideal education can, of course, only be realized by a system founded upon a comprehensive biological and psychological understanding of the developing child. To attain this vantage point the author has collected a vast amount of data from every available source.

The biological standpoint is established in the first two chapters. The school life of a child is divided into two periods, the pre-adolescent, from eight years of age until twelve, and the adolescent from twelve upward. During the first stage health is at its best, weight, activity, vitality and endurance are increased, the brain has attained nearly its adult size, and perception is very acute, while reason, æsthetic enjoyment and love are still but slightly developed. The qualities first to appear are the inheritance from remote ancestors, while those developing during adolescence are neo-atavistic. The early, more or less savage instincts, should in Dr. Hall's opinion be given an opportunity to realize themselves. If they are suppressed at this, their natal season, they are apt to burst forth later in much more dangerous

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forms. Herein lies the danger of precocity, which should be warded off by methods similar to the Aristotelian methods of *catharsis*. If the environment forbids a natural method of satisfying these tendencies, the child should be told stories of primitive peoples and their customs, and encouraged to live as much as possible out of doors and among the trees, flowers and animals.

In the school room all appeal to interest and understanding should be postponed until after the age of twelve. In the years between eight and twelve the child is peculiarly plastic and susceptible to drill and discipline. "It is the age of external, mechanical training. Reading, writing, drawing, manual training, musical technic, foreign tongues and their pronunciation, the manipulation of numbers and of geometrical elements, and many kinds of skill have now their golden hour. . . . Pedagogic art consists in breaking the child in to them betimes, as intensely and as quickly as possible with minimal strain, and with the least amount of explanation or coquetting for natural interest, and in calling medicine confectionery. . . . The automatic powers are now at their very apex, and they can do and bear more than our degenerate pedagogy knows or dreams of."

With the dawn of adolescence comes a complete change, both physical and mental. Rate of growth is greatly increased, while the growth of individual parts and organs is less uniform. On the psychic side the more distinctly human qualities are born and the time has come to make a direct appeal to the child's reason and emotion.

President Hall, however, is of the opinion that many of the qualities usually associated with puberty may develop earlier; that in this respect the order of development in the individual often departs from that of the race. Dr. C. Ward Crampton, in an article entitled "The Influence of Physiological Age upon Scholarship," which appeared in THE PSYCHOLOGICAL CLINIC, Vol. I, No. 4, claims that psychological age should be substituted for age in years in all grading and classification of children between the ages of nine and seventeen years. If Dr. Hall's conclusion is correct, the physiological age would be no surer index of mental development than the chronological.

Great stress is laid upon the necessity for well-planned and well-timed muscle training, nearly one-third of the volume being devoted to this subject. The muscles of the body are grouped in two classes—the fundamental, which control the movements of the trunk, limbs, neck, etc., and the smaller accessory muscles which govern the movements of the hand, tongue, face, organs of articulation, etc. The fundamental muscles are earliest called into activity and should be much exercised during the pre-adolescent period. The accessory muscles might be called organs of thought, the thought playing upon them by changing their tension. They are small and may be combined in action in various ways. These muscles should be sparingly exer-

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cised in pre-adolescence and in early adolescence. If they are exercised too much or too early, nervous-muscular irritability will be the result. Such a state is perhaps the best physiological characterization of precocity. As the number of habitual movements increases, the necessity for inhibiting and organizing the movements arises. This is not accomplished without great effort; only gradually does the child gain control over the muscular powers which it has developed.

Methods of motor education are treated under four headings,—industrial education, manual training, gymnastics, and plays, sports and games.

In industrial education diversity of training should be the aim. It should exercise all those muscular activities which, since their development through the early struggles of the race with the environment, have been the inherited tendency of mankind. Young people who till the soil, build, manufacture, etc., are repeating the history of the race and thereby laying the best foundation for intellectual careers. The middle and later "teens" is the age best adapted for this sort of training. The best industrial schools in the land, in Dr. Hall's opinion, are some of the institutions for negroes, Indians and juvenile delinquents.

The principle which underlies the manual training of to-day is "Keine Kentnisse ohne Fertigkeiten." Man excels the higher anthropoid apes almost as much in hand power as in mind, and as the manual areas of the brain are contiguous to the psychic zones, the development of manual dexterity is also potent in opening the intellect. The prevalent methods are at fault in laying too much stress upon the development of the smaller muscles, at the expense of those of the legs, back and trunk; also in concentrating too exclusively on technic, sacrificing content to form, and thus falling into the error which has always marked degeneration in education.

A good system would extract basic types of work from all the manual occupations in which men now engage. It would adapt these types to the nature and needs of the youthful body and will at each stage of its development. Each operation and each tool would be studied with reference to its orthopædic value, bilateral symmetry, the muscles it develops and the habits it forms. Finally, uniformity of method would give way in every instance to individual adaptation.

As yet there has been no effort to develop such a system. Sloyd claims to have accomplished it for woodwork; there has been, however, hardly an attempt to give either a physiological or psychological justification for a single step in the graduation or correlation of the sloyd exercises. Moreover, it is largely handwork and absolutely unadapted to the needs of early adolescence.

Gymnastics is treated from the historical standpoint. The four ideals which underlie the physical culture idea are discussed. These

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are, (1) The training of all possible bodily movements, (2) The development of voluntary control of all movements, (3) The training of those muscles which are seldom used, and the exercise of extensor muscles in order to produce a buoyant mental attitude, (4) The training of muscles for the purpose of attaining symmetry and correct proportions, the norms being the averages laid down by anthropometric tables.

The "need [of modern gymnastics] is radical revision and coördination of various cults and theories in the light of the latest psychophysiological science . . . The present academic zeal for physical development in in great need of closer affiliation with anthropometry." The ideal gymnasium should offer thorough courses in methods of taking anthropometric measurements, in anatomy, physiology, hygiene, and the history of gymnastics. President Hall also thinks it would be wise so to expand these courses that they could in large measure satisfy the requirements for the A. B. degree. Such a step would, he thinks, broaden the sphere of the college and would supply the growing demand for physical trainers.

Play is considered as an expression of those instincts inherited from remote ancestors, it is a re-enactment of race habits, not a preparation for future adult activities. This is why play is entered into with such zest and enjoyment. Gulick's idea is quoted, that those activities are most interesting which at some time in race history were necessary to survival, and it is shown that such activities, although no longer necessary from the point of view of utility, are necessary for the full development of the body, which has its present form only as the result of its racial evolution.

In games, as in all other muscle training, children must be led to exercise first the fundamental muscles and later the accessory. "Hereditary momenta really determine, too, the order in which nerve centers come into function. The oldest racial parts come first, and those which are higher and represent volition come much later." Hughlings Jackson is quoted as having pointed out how this is exemplified in the early development, by the acts of mastication and deglutition, of the muscles destined to be used later in speech. Perhaps it is the necessity of this preliminary muscular exercise for the normal development of the power of speech which partially accounts for the fact that many feeble-minded children, who have not passed beyond the bottle stage of feeding at the age of five, six, or even eight years, have failed to develop the faculty of speech; especially as it is also a fact, that after such children have been trained to eat solids, it is possible in many cases to teach them to talk.

Great stress is laid upon the educative power of rhythmic movements. It is suggested that rhythm may have been the great basic tendency from which play, art, and work all spring. Adolescence is the period of greatest susceptibility to rhythm, and dancing is extolled as

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the best of rhythmic exercises. When used aright dancing "can cadence the very soul, give nervous poise and control, bring harmony between basal and finer muscles, and also between feeling and intellect, body and mind. It can serve both as an awakener and a test of intelligence, predispose the heart against vice and turn the springs of character toward virtue."

The rhythm of work and relaxation among primitive peoples and adolescents is contrasted with that of the adult adapted to modern conditions. The dislike of regularity and continued work, so evident in youth, may be simply an expression of a phase of individual development corresponding to a more primitive era in race history.

The results of many interesting investigations on the subject of children's plays are presented.

Play itself is idealized. "All true play," says President Hall, "is love and prayer," and again, "play is, at bottom, growth, and at the top of the intellectual scale it is the eternal type of research from sheer love of truth."

The chapter on faults, lies and crimes consists largely of reports of investigations on these subjects. It is pointed out that educational advantages often increase crime among young people, introducing new and complex kinds, of which they were incapable when more ignorant. Youthful crime is an expression of educational failure, for the ultimate verdict concerning the utility of school will be determined by its moral efficiency in saving children from vice and crime. Ignorance is not incompatible with virtue, and President Hall condemns the idea that any merely educational training can moralize. How to deal with juvenile delinquents, he considers the great question of criminology, and he believes it should be made the basis of the study of ethics, which should work its way through this concrete beginning to a larger and higher philosophy of conduct than is commonly taught to-day.

Much information as to the nature of adolescents is gleaned from biographical and autobiographical studies of youth. The youthful characteristics of many well-known men are sketched, and autobiographies of a number of men and women are quoted freely. Such literature, President Hall thinks, should have a place of its own in the history of letters and criticism, and much of it should be used as reading matter for the young.

The gradual change in the character of the social ideals, as the child grows older, is shown by a presentation of the results of some thirty investigations, many of them made by the questionaire method, on the subjects of children's ideals, ambitions, ethics, property, judgment, crimes and social organizations. As children advance in age they tend more and more to choose their ideals from among public or historic personages, and to depend more largely upon ethica[illegible] others.

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intellectual or military qualities. Girls are very apt to choose men as ideads; this President Hall regrets, and advises that lives of great women be substituted for those of men in their courses of study. But why, when girls name men as ideals, is it necessary to believe that they wish to be men? It may mean only that they admire the particular virtues which those men possess. A girl who chooses Marcus Aurelius for her ideal may only mean that she values highest such moral qualities as he displayed.

In treating of intellectual education, Dr. Hall places first in importance the study of the vernacular language and literature.

Both high school and college students, he finds, have a very poor command of their native tongue. This fact he traces to four errors in educational method:—(1) Too much time is given to the acquisition of other languages at the period when attention should be focused on the native tongue. (2) There is an over-emphasis of grammar and form at the expense of literature, a subordination of content to form. "The great teacher who, when asked how he obtained such rare results in expression, answered, 'By carefully neglecting it and seeking utter absorption in subject-matter,' was also a good practical psychologist." (3) The neglect of oral language training, and the substitution of too much book-work and too many written exercises. (4) The neglect of training in abstract thought which is a consequence of the concrete teaching methods of the day.

Without the power of abstraction and generalization high mental development is impossible, and thought is of that elementary, half-animal kind which consists of imagery and lacks even the elements of creative imagination. "It is as if what are sometimes called the associative fibres both ends of which are in the brain, were dwarfed in comparison with the afferent and efferent fibres that mediate sense and motion." The facts of aphasia are cited to prove "that the soul of language as an instrument of thought consists in this non-presentative element." In progressive aphasias, words designating objects and acts familiar to the patient are first lost, and only later those words used in abstract thinking. The reason of this President Hall thinks is obvious and states it as follows: "It is because concrete thinking has two forms, the word and the image, and the latter so tends to take the place of the former that it can be lost to both sense and articulation without great impairment, whereas conceptual thinking lacks imagery and depends on words alone, and hence these must persist because they have no alternate form which vicariates for them."

It is obviously necessary for coherence of thought that the words for abstractions be retained, but it is not quite so obvious why this necessity should determine the seat of the brain lesion, or if the modern theory of definitely circumscribed speech centers be abandoned, why functional disturbance should necessarily wipe out concrete

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verbal thought rather than abstract. Abstract thought is a later development, the result of more complex processes, and therefore in a degenerative process it might be expected to be first effaced.

The failure of the schools to initiate students into the art of abstract thinking at a period when their development requires it, is well brought out in the returns of a number of questionaires on the subjects of children's slang, interest in words, stories, etc. These show that there is a natural tendency at adolescence toward abstract thought and that when appropriate words are not presented, any words are adopted which express concisely, accurately and forcibly the ideas and feelings which are dominant. Slang words have these qualities and in consequence they make a strong appeal between the ages of twelve and fifteen. During the same period is developed an intense enthusiasm for books, which increases steadily up to the age of sixteen, girls usually preferring books written by women, and boys those written by men.

The results of several interesting studies on children's memory, point to the conclusion that power of memory is correlated with age rather than with intelligence, increasing as the child grows older.

In closing the chapter President Hall urges the need of investigating the mentality of adolescents in almost all its phases, and expresses the opinion that school boards and teachers' associations should aid in making such investigations possible.

In discussing the education of girls Dr. Hall insists that just as educational methods must be adapted to the stages of the child's biological development, so must they be adapted to the characteristic differences of the sexes. He believes that co-education, especially in the high school, is apt to have a bad effect on both boys and girls. If the girls predominate, as they usually do in the high schools, the curriculum is likely to become feminized, which means that content and utility must give way to form and method; the boys become restless and drop out of school or they grow content with mechanical memorizing. Constant intercourse with girls also lessens the power of the latter to charm and interest. The effect on the girls is considered bad, in that it threatens her femininity by encouraging the adoption of masculine ideals, also in that familiar intercourse with boys of her own age at a time when her earlier maturity would make older men more congenial, tends to lower her opinion of men. It does not occur to Professor Hall that one of these evils might neutralize the other.

President Hall believes that woman has proved her intellect to be the equal of man's; he objects, however, to the conclusion that because woman can do many things as well as man she should do them.

He sketches in broad outline a plan for the education of girls. This he bases upon a conception of woman's nature, which though just in some respects, is tremendously exaggerated and even false in others.

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This conception is partly based on data contained in such autobiographical outpourings as those of Stella Klive, Mary MacLane, Hilma Strandberg, and Marie Bashkirtseff, whom he calls "veritable spies upon woman's nature; [who] have revealed the characterlessness normal to the prenubile period in which everything is kept tentative and plastic, and where life seems to have least unity, aim, or purpose."

Few people who are moved to write autobiographies are altogether normal, and those mentioned are surely not exceptional in this respect. I feel confident that to many commonplace women the first intimation of the existence of sentiments akin to those expressed by Mary MacLane was received through the pages of her book or those of President Hall.

The plan for girls' education is in brief as follows: Its end and aim should be to prepare for motherhood. Perfect health should be the desideratum. There should therefore be plenty of exercise both in the open air and gymnasium and as little physical strain as possible. Stress should be laid upon manners and effort made to inculcate a regard for the feelings of others. The purely mental should be held back to give opportunity for the deepening of the intuitions. Religion should be emphasized and its æsthetic side not neglected. Only the rudiments of mathematics and the sciences should be taught, and these concretely and out of doors when possible. The study of animal life should lead up to that of heredity, which should have a dominant place and be followed by studies of myths, customs, beliefs, domestic practices of savages, and animal traits in infancy and childhood, always with the chief emphasis on great results and basic principles. History should be taught largely through biography, and sociology should have a prominent place. Art should be presented with the aim of cultivating a discriminating taste. In literature, myth, poetry and the drama should lead, and Greek, Hebrew and Latin give place to German, French and Italian. Metaphysics, epistomology and logic should have a small place, genetic psychology should be taught and developed through the love of infancy and youth. Domesticity, child study, pedagogy and a course in maternity and nursing complete the curriculum. Finally, the methods throughout should be objective and concrete, book study should be limited, examinations reduced to a minimum and "everything be as suggestive and germinal as possible. Hints that are not followed up, information not elaborated, seed that is sown on the waters with no thought of reaping . . . training which does not develop hypertrophied memory-pouches that carry, or creative powers that discover or produce—these are lines on which such an institution should develop."

President Hall prophesies that if ever a woman Descartes does arise, her watchword will be not *cogito, ergo sum,* I think, therefore I am, but *sum, ergo cogito,* I am, therefore, I think. This is probably true, but it is also true that there are plenty of women to-day, not Descartes

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by any means, who already realize the force of *sum ergo cogito,* who, because they exist, must think, and for whom such a smattering of many things as is outlined above would be entirely unsatisfying and incomplete. In the chapter on intellectual education President Hall has pointed out that such concrete sensory training as he advises for girls, produces a mind incapable of any but infantile thought; in the chapter on moral and religious training he shows that, "only great concentration and prolonged efforts in one direction really train the mind, because only *they* train the will beneath it." "Only the sense of power and effort which made Lessing prefer the search to the possession of truth . . . counts for character." He therefore practically advises that woman be given an education which will necessarily make her a fine physical creature, dominated by emotion and sentiment, but childish and primitive in thought and without will or moral force.

In the final chapter on religious and moral training, it is shown how important it is to supplement all training by a conscious effort to develop the will. This may begin in the cradle by awakening the power of love, and continue throughout early childhood by a careful guidance in the formation of habits, and an effort to inspire sentiments of religious awe and reverence. If in intellectual fields the work be prolonged and thorough in one direction, and if this be supplemented by systematic muscle training, the youth will find himself at the dawn of manhood capable and self-controlled.

The great strength of the book is its pedagogical value, which is twofold,—(1) It points out unerringly and convincingly many weak points in the present educational system; (2) It gives precise and illuminating advice as to the direction and methods of research which will be of most value in overcoming these defects.

Its weakness is its incomplete, sentimental conception of woman and her educational needs, and the distinctly unscientific appeal to the emotional nature which is conspicuous throughout the book and decidedly detracts from its force.

C. H. T.

NEWS AND COMMENT.

Five years ago the Visiting Nurse Society of Philadelphia placed a nurse in a large public school in one of the poorest quarters of the city, to work in conjunction with the medical inspector. They chose Miss Anna L. Stanley for this post, and for several years she carried on the work alone. Last fall the society placed four other nurses in the schools, under the direction of Miss Stanley. As a result of the successful pioneer work done by the Visiting Nurse Society, Councils have recently authorized the Board of Education to appoint a super-

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vising nurse at a salary of $1,200 a year, and five assistant nurses at $900 each. It will be a source of gratification to those who have followed the history of the school nurses, to learn that Miss Stanley has been appointed supervising nurse by the Board of Education, for it is largely owing to her tact and devotion that the experiment has been brought to a successful conclusion.

The British Child Study Association has united with the Childhood Society to form the Child-Study Society. In consequence of the reorganization, *The Paidologist,* hitherto the journal of the Child-Study Association, has been discontinued, and its place will be taken by a new magazine called *Child Study,* which will be published as the official organ of the new society.

The officers of the Child-Study Society are: *President,* Sir Edward W. Brabrook, C.B.; *Vice-President,* The Hon. Sir John Cockburn, M.D.; *Honorary Secretaries,* Miss Mary Louch and W. J. Durrie Mulford, Esq.

The Philadelphia Teachers' Association, organized three years ago as an experiment, has proved a flourishing success. Its membership of nearly four thousand includes representatives in every public school in the city. For the winter of 1907-08 committees have been appointed to plan and discuss every phase of educational work. These committees are as follows: On professional work; on higher schools; on grammar schools; on primary and kindergarten schools; on professional reading; on public meetings; on the immigrant child; on special schools; on legislation; on entertainment; on membership; a conference committee of teachers of eighth year grammar and first year high school; on Lewis Elkin Room (in the Jefferson Hospital); and an auditing committee.

Of these, the committee on special schools is naturally the one whose proceedings are of the greatest interest to readers of THE PSYCHOLOGICAL CLINIC. In the Normal School, on the 11th of November, the committee held a symposium on "The Problem of Special Education." The program included addresses by Miss Lydia A. Kirby, superintendent of special schools; Mr. George Wheeler and Dr. Oliver P. Cornman, district superintendents; Mr. E. A. Huntington, principal of Special School No. 3; Miss Mary Days, a teacher in Special School No. 5; Miss Corinne B. Arnold and Miss Margaret Maguire, supervising principals; and Dr. Walter S. Cornell, medical inspector. On December 9th another conference was held in the Normal School to discuss the question, "Who Shall Determine whether a Child Is a Fit Candidate for a Special School?" Four observation trips for the teachers of special schools have also been arranged, the first of which was made on Saturday, November 16th, to the New Jersey Training School for Feebleminded Children at Vineland, N. J.

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THE RETARDATION OF THE PUPILS OF FIVE CITY SCHOOL SYSTEMS.

By Oliver P. Cornman, Ph.D.,

District Superintendent of Schools, Philadelphia, Pa.

Ever since the system of graded schools was established, children have been promoted from grade to grade at stated periods as they completed definite units of work. But not all children of each grade have been thus promoted, for a percentage has always failed of promotion and been required to repeat in whole or in part the work of the grade. This failure to win promotion has served to establish the fact that some children proceed more slowly through the grades than others.

The child who fails of promotion and therefore requires more than a single year or term to do the work regularly allotted, is "retarded" in comparison with those who have progressed at the normal pace. It is a matter of indifference in establishing the fact of retardation, whether the cause resides in the child himself, in home or school conditions, or in a combination of these and other factors.

That different classes, schools, and school systems vary considerably in the percentages of children promoted, is shown by even the most cursory examination of promotion statistics. The records even for the same school, or for the schools of the same city, sometimes show great variation in these percentages from year to year. Thus the annual report for one large city shows that several schools promoted 60 per cent or less of their pupils, while other schools promoted 90 per cent or over. In another city the percentage of variation ranged from 42 per cent to 92 per cent. These facts have served to direct attention to an excessive amount of retardation present in special instances, and have aroused discussion which has led to improvement in the

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methods of gradation and promotion in many schools; but they have not been fruitful in furnishing us with a satisfactory measure of the amount and general extent of retardation. The determination of a common and comparable measure of retardation for the schools of a single city and for different cities, is a real problem, calling for solution to-day by the administrative officers of our school systems.

The attempts that have been made to solve this problem have done little more up to the present time than call attention to the existence of the facts. Thus the report of the city superintendent of Chicago for 1906 includes a valuable special investigation of the number of backward children in that city. This number is determined by excessive time in grade, and by the personal opinion of teachers as to the inability of their pupils to progress under instruction in regular classes up to the full limit of the school curriculum. The investigation, however, was restricted to certain grades, and does not show the percentages of retardation for other grades or for the city as a whole.

In Philadelphia, statistics of retardation based upon excessive time in grade have been collected for the years 1905, '06 and '07. The usual promotion records for each grade indicate the number of children two years in grade, the number three years or more in grade and the percentages of the enrolment which these retarded children represent. These facts were obtained for each grade and collated for schools, districts, and for the city as a whole. There was thus given much information of practical value in dealing with the problem, but the method does not furnish an entirely satisfactory standard of measurement. It makes possible an estimate of retardation as it may exist within the school system, but it does not account for that which may be due to influences or conditions outside the school. Thus children over age for their grade are, strictly speaking, retarded, regardless of the cause and even though they may, at the time the statistics were obtained, be passing through the grades at a normal pace. These children slip through the statistical net supposed to be spread for them by these promotion records, and fail to be counted as retarded. The average age, which is usually taken as a criterion of the progress of the children in the grades, loses much of its significance because the under age children offset those over age, and the cases of extreme over age, which are pedagogically of great interest, fail to affect the average by more than a trifling fraction of a year.

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We are therefore compelled to turn to the enumeration of the children in the grades by ages for a more satisfactory standard by which to measure retardation. The statistics on which this standard of measurement is based are in many respects more valuable than those based upon the number of years in grade. They are simple, certain, easy to collect, and embody unequivocal information as to many conditions and results of school work. It would seem, therefore, desirable to give them a place as a regular item in the annual report of every school system. In some city reports, this enumeration does appear annually, but in most cases it seems to be recorded without a full appreciation of its significance and value. The numbers are not reduced to percentages, and receive little or no attention by way of comment or analysis.

A beginning, however, has been made. The city superintendent of New York in his report for 1904 invited attention to the fact that a large number of pupils (39 per cent in the elementary grades) were shown by his tables to be older than what might reasonably be called the normal age for the grade. Since that year he has regularly published similar tables, which it is worth observing disclose a considerable reduction in the amount of retardation, the report for 1906 showing but 30 per cent. The drawing of attention to the problem has evidently produced good results. For Camden, N. J., Superintendent Bryan is employing the statistical method under discussion with good effect in a special investigation of the extent and causes of retardation in the schools of that city. A partial collation of his results appeared in the April, 1907, number of this journal.*

For Philadelphia the distribution of pupils in the grades by ages was tabulated in June, 1907. The number and percentages of children above the normal age for their grade were found to be so high as to be a cause of surprise to educators unfamiliar with the similar results obtained by Dr. Maxwell and Superintendent Bryan for the schools under their charge. Whether a percentage of retarded children is to be considered large or small can be determined only by a comparison of statistics obtained from several cities. To serve this purpose I have compiled the retardation statistics for four other cities—Boston, New York, Camden, N. J., and Kansas City. The list of these cities is a small one because the published material is limited, as well as the time that I could devote to the collation. The results for these

*The Psychological Clinic, Vol. I, No. 2, p. 41.

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TABLE I.—CAMDEN, SEPTEMBER, 1905.

DISTRIBUTION OF PUPILS IN THE GRADES BY AGES.

Grade	6 or Under	7	8	9	10	11	12	13	14	15	16	17	18 or Over	Total	Above Normal Age	
															Number	Percent.
8	.....	.....	.....	.....	.....	1	10	46	90	82	27	11	2	269	122	45.3
7	.....	.....	.....	.....	2	10	49	114	128	87	46	11	2	449	274	61.0
6	.....	.....	.....	1	33	120	198	250	164	75	17	5	.....	863	511	59.1
5	.....	.....	3	29	135	305	373	274	128	50	4	.....	.....	1,301	829	63.7
4	.....	2	40	236	397	469	363	245	89	14	2	1	.....	1,888	1,183	63.6
3	3	93	297	561	470	317	238	115	42	10	.....	.....	.....	2,146	1,193	55.5
2	116	503	600	448	268	133	75	38	8	4	3	1	.....	2,197	978	44.4
1	1,762	958	494	237	136	69	33	20	7	.....	1	.....	.....	3,717	997	26.8
Total..	1,881	1,556	1,434	1,512	1,441	1,424	1,339	1,102	656	322	100	29	4	12,800	6,086	47.5

TABLE II.—KANSAS CITY,* JUNE, 1906.

DISTRIBUTION OF PUPILS IN THE GRADES BY AGES.

Grade	6 or Under	7	8	9	10	11	12	13	14	15	16	17	18 or Over	Total	Above Normal Age	
															Number	Percent.
8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7	.....	.....	.....	.....	2	24	229	610	620	413	148	33	14	2,103	1,228	58.3
6	.....	.....	.....	.....	37	297	675	778	555	220	66	17	5	2,650	1,642	61.9
5	.....	.....	.....	44	349	832	888	636	339	170	30	6	1	3,295	2,070	61.0
4	.....	1	42	453	1,048	1,073	747	455	232	64	14	2	5	4,136	2,592	62.6
3	.....	46	572	1,226	1,101	588	394	208	81	21	3	2	1	4,243	2,399	56.5
2	70	784	1,308	1,029	572	250	148	86	29	7	3	.....	.....	4,286	2,124	49.5
1	3,432	2,278	1,182	477	254	89	77	39	12	9	1	.....	.....	7,850	2,140	27.2
Total..	3,502	3,109	3,104	3,229	3,363	3,153	3,168	2,812	1,868	904	265	61	26	28,563	14,194	49.6

*Seven year course for elementary schools.

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TABLE III.—BOSTON, JUNE, 1906.

DISTRIBUTION OF PUPILS IN THE GRADES BY AGES.

Grade	6 or Under	7	8	9	10	11	12	13	14	15	16	17	18 or Over	Total	Above Normal Age	
															Number	Percent.
8	.....	.....	.....	.....	2	83	660	1,684	1,767	844	248	27	6	5,321	1,125	21.1
7	.....	.....	.....	6	83	703	2,050	2,164	1,179	401	91	7	7	6,691	1,685	25.2
6	.....	.....	1	72	736	2,253	2,398	1,543	645	189	51	5	1	7,894	2,434	30.8
5	.....	.....	66	793	2,681	2,481	1,605	804	264	69	21	2	.....	8,788	2,765	31.4
4	.....	17	839	3,079	2,831	1,453	722	334	104	21	2	.....	.....	9,402	2,636	28.0
3	14	865	3,662	3,006	1,340	328	86	35	.....	.....	.....	.....	.....	9,336	1,789	17.9
2	1,116	4,273	3,209	1,249	351	51	21	6	.....	.....	.....	.....	.....	10,276	1,678	16.3
1	9,205	3,129	965	249	63	25	8	5	.....	.....	.....	.....	.....	13,669	1,335	9.7
Total..	10,335	8,284	8,764	8,454	8,087	7,377	7,550	6,575	3,959	1,524	413	41	14	71,377	15,447	21.6

TABLE IV.—PHILADELPHIA, JUNE 1907.

DISTRIBUTION OF PUPILS IN THE GRADES BY AGES.

Grade	6 or Under	7	8	9	10	11	12	13	14	15	16	17	18 or Over	Total	Above Normal Age	
															Number	Percent.
8	.....	.....	.....	.....	2	94	808	2,182	2,082	1,174	357	86	10	6,795	1,627	23.9
7	.....	.....	.....	4	101	909	2,495	3,237	2,043	777	190	33	4	9,793	3,047	31.1
6	.....	.....	1	85	1,117	3,284	4,246	3,795	1,814	496	87	14	3	14,942	6,209	41.5
5	.....	.....	77	1,470	4,253	5,413	4,605	3,225	1,109	245	29	6	1	20,433	9,220	45.1
4	.....	77	1,604	4,983	6,029	4,449	2,883	1,661	492	96	9	5	.....	22,293	9,600	43.0
3	79	2,150	6,325	6,956	4,946	2,634	1,463	725	245	42	7	1	1	25,574	10,064	39.3
2	5,236	9,178	7,026	4,248	2,250	1,049	554	263	102	19	4	.....	.....	29,929	8,489	28.3
1	3,296	5,178	2,736	1,145	516	246	134	68	26	7	1	.....	.....	13,353	4,879	36.5
Total..	8,611	16,583	17,769	18,891	19,214	18,078	17,193	15,156	7,913	2,856	684	145	19	143,112	53,135	37.1

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TABLE V.—NEW YORK, JUNE, 1906.

DISTRIBUTION OF PUPILS IN THE GRADES BY AGES.

Grade	6 or Under	7	8	9	10	11	12	13	14	15	16	17	18 or Over	Total	Above Normal Age	
															Number	Percent.
8	.....	.....	.....	.....	24	611	4,279	9,201	8,820	4,596	1,173	205	23	28,932	5,997	20.7
7	.....	.....	.....	.....	626	4,733	11,748	13,543	8,842	3,093	602	65	8	43,260	12,610	29.1
6	.....	.....	14	533	5,378	13,830	16,530	12,722	6,293	1,585	242	20	.....	57,147	20,362	35.5
5	.....	.....	463	6,011	17,208	19,362	15,165	9,085	3,794	944	93	3	.....	72,128	29,084	40.3
4	.....	349	5,659	20,366	22,319	15,219	8,517	3,808	1,388	261	36	.....	.....	77,822	29,129	37.4
3	221	5,412	24,130	25,098	14,945	6,367	2,732	1,183	318	108	.....	.....	.....	81,114	25,653	31.6
2	6,920	30,294	25,458	12,105	4,447	1,616	604	240	96	.....	.....	.....	.....	81,780	19,108	23.4
1	32,102	17,734	5,643	1,536	546	183	91	58	.....	.....	.....	.....	.....	57,893	8,057	13.9
Total..	39,243	53,789	61,367	66,249	65,493	61,921	59,666	49,840	29,451	10,587	2,146	293	31	500,076	150,500	30.0

TABLE VI.—SUMMARY OF PERCENTAGES OF ENROLLMENT "ABOVE NORMAL AGE."

Grade	Above Normal Age defined as	1	2	3		4	5		
		Camden, Sept., 1905.	Kansas City, June, 1906.	Boston.		Philadelphia, June, 1907.	New York.		
				Jan., 1906.	June, 1906.		June, 1904.	June, 1905.	June, 1906.
8	15 years or over..	45.2	.....	14.7	21.1	23.9	25.3	19.0	20.7
7	14 " " "..	61.0	56.3	18.8	25.2	31.1	32.8	28.0	29.1
6	13 " " " ..	59.1	61.9	24.3	30.8	41.5	42.0	37.6	35.5
5	12 " " "..	63.7	61.0	28.3	31 4	45.1	40.0	42.9	40.3
4	11 " " "..	63.6	62.6	21.0	28.0	43.0	40.2	40.1	37.4
3	10 " " "..	55.5	56.5	11.6	17.9	29.3	45.0	34.1	31.6
2	9 " " "	44.4	49.5	10.2	16.3	28.3	33.1	25.6	23.4
1	8 " " "..	36.8	27.2	5.7	9.7	36.5	23.2	16.6	13.9
	Total.....	47.5	49.6	15.4	21.6	37.1	39.0	30.1	30.0

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TABLE VII.—RETARDATION IN ELEMENTARY SCHOOLS AS SHOWN BY DISTRIBUTION OF PUPILS IN THE GRADES BY AGES.

City.	Date of Record.	Total Enrollment.	Beyond Theoretic Limit.*	Beyond Theoretic Limit by				Percent Beyond Theoretic Limit.	Percent Beyond Theoretic Limit by			
				1 Year or more.	2 Years or more.	3 Years or more.	4 Years or more.		1 Year or more.†	2 Years or more.‡	3 Years or more.	4 Years or more.
Camden.....	Sept., 1905.	12,800	9,309	6,086	3,372	1,737	623	72.7	47.5	26.3	12.7	4.8
Kansas City.	June, 1906.	28,563	22,171	14,194	7,523	3,535	1,475	77.6	49.6	26.3	12.3	5.1
Boston.....	June, 1906.	71,377	36,432	15,447	5,249	1,501	396	51.0	21.6	7.3	2.1	.5
Philadelphia.	June, 1907.	143,112	93,302	53,135	25,139	10,049	3,479	65.1	37.1	17.5	7.0	2.4
New York...	June, 1906.	500,076	299,964	150,500	61,263	20,754	5,866	59.9	30.0	12.2	4.1	1.1
	Total.....	755,928	461,178	239,362	102,546	37,576	11,839	61.0	31.6	13.5	4.9	1.5

* Defined as 7 years of age or over for pupils of first grade; 8 years of age or over for pupils of second grade, and so on through the grades.
† "Above Normal Age" as defined by Dr. Maxwell.
‡ "Pedagogically retarded" as defined by Superintendent Bryan.

TABLE VIII.

City.	Enrollment.			Percent of Total Enrollment.	
	Total.	7th Grade.	8th Grade.	7th Grade.	8th Grade.
Boston.....	71,377	6,691	5,321	9.3	7.4
New York.....	500,076	43,260	28,932	8.6	5.7
Philadelphia.....	143,112	9,793	6,795	6.8	4.7
Kansas City.....	28,563	2,103	.....	7.3	.....
Camden.....	12,800	449	269	3.5	2.1
Total.....	755,928	62,296	41,317	8.2	5.6

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five cities, however, comprising as they do nearly 5 per cent of the elementary school population of the United States, are, I believe, sufficiently typical to afford a satisfactory basis for discussion and further elaboration of the statistical material.

In tables I to V inclusive, pages 248-250, the actual number of children of each age in each grade is given for these cities in the following order: Camden, Kansas City, Boston, Philadelphia, New York. This enumeration establishes the basis upon which the percentages that appear to the right of the tables have been computed. The results for all the cities are combined in table VII, page 251. From this table it will appear that the five cities bring under consideration 755,928 children, approximately 5 per cent of the children in the elementary schools of the United States. If we follow Superintendent Bryan and regard a first grade child of seven years of age or over as beyond the "theoretic age limit" for that grade, and a second grade child of eight years of age or over as beyond the theoretic age limit for that grade, and so on throughout the grades, we find 61 per cent of the children beyond this theoretic age limit. Boston has the smallest percentage, 51 per cent, and Kansas City the largest percentage, 77.6 per cent. If with Dr. Maxwell we use the term "above normal age" for a child one year beyond this theoretic age limit, *i. e.*, a first-grade child of eight years of age or over, it appears from table VII that 31.6 per cent are above normal age. Boston again has the lowest percentage, 21.6 per cent, and Kansas City the highest, 49.6 per cent. If we take Superintendent Bryan's definition of a "pedagogically retarded child" as one two years beyond the theoretic age limit for each grade, then 13.5 per cent are pedagogically retarded, the limits ranging between 7.3 per cent for Boston, and 26.3 per cent for Camden and Kansas City. Table VII also reveals that of the children of these five cities, 4.9 per cent are three years or more beyond the theoretic age limit, and 1.5 per cent are four years or more beyond the theoretic age limit.

Tables I-V have been prepared not only for the purpose of showing the distribution of the pupils by age throughout the different grades of the five cities concerned, but also to present the number and percentage of these pupils above normal age as defined in the preceding paragraph. The heavy line of steps running obliquely across the table is the line of separation between the children of normal age and those above normal age. All the figures to the right of this black line enumerate children who are

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above normal age. The tables also make possible a collation of the exact number of children who are above normal age by any desired number of years. The total registration for each grade of each school system is given in these tables, as also the total number of children above normal age and the percentage of the total number enrolled which the children above normal age represent.

In table VI, page 250, the percentages of children above normal age, shown in the first five tables, are combined in a single table for convenience of comparison. It appears from this table that the percentages of retardation for every city increase through the grades to the fourth or fifth grade, and then fall off, seemingly because the older children drop out of school to go to work.

Some remarkable differences are displayed in these tables. New York for June, 1906, shows 30 per cent of children "above the normal age," as against 21.6 per cent for Boston also for June, 1906. Philadelphia for June, 1907, has 37.1 per cent, even more than New York, while Camden for September, 1905, and Kansas City for June, 1906, have 47.5 per cent and 49.6 per cent respectively.

This difference between the cities is even more marked when we compare them with reference to the various degrees of retardation given in table VII. Thus in the column which shows the percentages of children two years or more beyond the theoretic age limit, we find that Boston has 7.3 per cent, New York 12.2, Philadelphia 17.5 per cent, and Camden and Kansas City 26.3 per cent. In the column which shows the percentages of children three years or more beyond the theoretic age limit, we find that Boston has 2.1 per cent, New York 4.1 per cent, Philadelphia 7.0 per cent, Kansas City 12.3 per cent, and Camden 12.7 per cent. Camden and Kansas City have six times as many children three years or more beyond the theoretic age limit for the grade, while New York has twice as many and Philadelphia three times as many as the city of Boston. Of children four years or more beyond the theoretic age limit, Boston has 0.5 per cent, New York 1.1 per cent, Philadelphia 2.4 per cent, Camden 4.8 per cent and Kansas City 5.1 per cent.

This result must be viewed in relation to the results shown in table VIII. Of the five cities Boston has the largest percentage enrolled in the seventh and eighth grades. New York comes next, Kansas City is third, Philadelphia fourth and Camden brings up the rear. It is probably to be expected that cities having

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smaller percentages of retardation would have relatively more pupils in their higher grades. Boston is now able to make the proud boast that she has a seat in school for every child able to attend. This condition may be due in part to the smaller percentage of retardation. Were the stream of children through the grades less rapid, perhaps she would have her thousands or tens of thousands upon part time, while empty benches yawned for occupancy in the highest grades. Damming the stream of children passing through the grades of our schools subverts the purposes of the public educational system and causes a wasteful expenditure of the public funds.

The number of over-age or retarded pupils in our school is so large as to call for an investigation of the causes and the application of every adequate remedial measure that may be devised. Apart from the deplorable arrest of mental development produced by excessive delay in grade, which in turn reacts upon school progress to cause a still greater delay in grade,—a vicious circle from which the over-age child finds it difficult to escape; and apart from the question of the relatively poor quality of at least a portion of the product turned out by the schools as a result of these conditions, there is from the point of view of economy an enormous financial waste involved. The child that takes ten years to complete an eight year course, costs the state 25 per cent more than one who gets through on time. Complete statistics of retardation would furnish the data upon which might be made a fairly accurate computation of the cost of this delay in the grades. It is safe to assert that the total loss to the community would be found to be surprisingly large.

The collation of statistics similar to those which I have presented, and a careful analysis of the results, would give us much valuable information as to the causes of this retardation. A certain proportion of the retardation is due to the fact that pupils are already over age on entering school. A fairly accurate estimate of the size of this factor could readily be made by a careful tabulation of registration data. In some cities large numbers of foreign born children are retarded on account of difficulty with the language.

A certain percentage of children have serious physical or mental defects, which prohibit normal progress in regular classes, and these go to swell the retardation figures in every school system. We refer to the child who is markedly atypical or different from the average of his fellows,—the "hundredth child," as he has

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been well named, a denomination that suggests an approximately accurate estimate of the number of these children; for such investigations as have been made show that at least 1 per cent of the children of school age may properly be classified in this way.

Overcrowded classes and children upon part time instruction or on waiting lists, the results of inadequate accommodations, are in very many places a contributory factor of no mean proportions.

Another important factor is the system of classification and promotion, by which children are periodically regraded. If the system is of the inflexible, lock-step variety, which compels some to mark time while others are unduly stimulated, which prescribes a year's repetition of work when only a few weeks or months of review are needed, over-age children will of necessity accumulate. Variations from the average usually occur both in the positive and negative directions, but many of our promotion systems allow the child to vary his rate of progress through school in only one direction. Accident, disease, and temporary physiological retardation in mental growth will cause him to be retarded in his progress through the grades, but no provision is made for the acceleration of progress when conditions render this possible.

Another cause of retardation which operates in schools as in all undertakings under human management, is inefficiency,—inefficiency of a particular teacher, principal, superintendent, or administrative system. "The class was under a substitute teacher for several weeks," is an explanation considered quite sufficient for a low percentage of promotion. What a commentary upon the system which obtains in many places of employing the 'prentice hand of the recent normal graduate upon the most difficult piece of work that can be assigned, the task of serving in place of the skilled teacher, on the briefest notice, in an unfamiliar school, and in any grade!

To discover, to devise, and to apply remedies for the excessive retardation that is found in our schools, is much more difficult than to enumerate the causes. The late entrance to school is due on the one hand to the thriftlessness of the ignorant parent, too often of American birth, and on the other to the large numbers of immigrant children. Dr. Maxwell has recommended that the age for compulsory attendance be reduced to seven, at least for the large cities of New York state. Seven is the compulsory age in some states, for example, in New Jersey. If the issue were not so obscured by the complexity of causes at work, the efficiency

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of the compulsory law might be tested by comparing retardation results in these places with the records of those having a higher local age limit. The late entrance to school of the immigrant child is beyond our control. In some cities these over-age children are grouped in classes and given intensive work in language to hasten the time when they may take their place in regular classes with others of their own age. For other cities the plan is advocated of so placing these children from the start that they may pick up the language in the course of the regular instruction. We need to study the results of these two methods before we shall be able to pronounce an opinion as to their relative value. Perhaps the ultimate solution will be found in the combination of the two methods. Special classes and special courses of study for the over-age children who may be expected to leave school early in life, and for the physically and mentally defective, need to be multiplied rapidly if the solution of the problem of retardation is to be satisfactorily attempted. There should be a careful development of a system for the periodical examination by teachers and by a medical or psychological expert, of all children two years or more beyond the theoretic limit for their age. This is necessary in order to provide for the segregation of pupils in special classes, which should be undertaken only on a scientific basis, in order that experience may enable us to discover and diminish or remove the causes of retardation.

Systems of classification and promotion must be made as flexible as conditions will permit, in order to allow each pupil to proceed at the pace natural to himself. It should be recognized that the pupil of extraordinary ability, as well as the backward or otherwise defective child, needs special consideration. After all, the most neglected pupils of our schools are perhaps the exceptionally bright or talented, and those with a real spark of genius. These too often are left to take care of themselves, marking time or worse, while the attention of the teacher is devoted to the dull plodder or to the mentally defective.

The reorganization of many administrative systems is required in order clearly to differentiate legislative and administrative functions, to fix responsibility, and to assure adequate resources for the schools. Philadelphia has benefited greatly in all these directions in the past two years through the passage of the act of Assembly of April, 1905. For reform in educational legislation for the remainder of the state, we confidently rest our hopes upon the commission appointed by the governor to codify the

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strange patch-work of school laws that are at present a disgrace to the commonwealth.

We may entertain very different opinions as to the causes of retardation and the relative value of the remedies to which I have been able only briefly to refer, but there should be no difference of opinion as to the value of the age enumeration and the collation of such statistics as I have herein presented. It is to be hoped that similar tabulations made upon a uniform basis will become part of the regular statistical reports of every public school system, and that this and other standards of measurement will be steadily developed and perfected. This is an essential prerequisite for assured and rapid advance in educational work. Norwood describing his measurement of a degree of latitude in 1635 wrote: "Sometimes I measured, sometimes I paced, and I believe I am within a scantling of the truth;" from this germ has grown the modern geodetic surveys that have made the dimensions of the world known within a few hundred yards. "In other branches of science," continues Jevons, "the invention of an instrument has usually marked, if it has not made, an epoch." The development of the science of heat was made possible by the thermometer; astronomy was mere astrology before the application of the pendulum to the exact measurement of time; chemistry was but alchemy prior to the perfection of the analytic balance. Similarly pedagogy will remain,—well, pedagogy will remain pedagogy unless ways and means are devised and applied of testing our methods, processes and results with an ever-increasing degree of accuracy.

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A CLINICAL EXAMINATION BLANK FOR BACKWARD CHILDREN IN THE PUBLIC SCHOOLS.

III.

By J. D. Heilman,

University of Pennsylvania.

On page 260 is given a sample blank as it was filled out in the examination of one of a thousand cases of retarded children. I gave a reproduction of this blank, partially filled out, in the last number of The Psychological Clinic. In this third article I propose to consider the items of the blank which I have not as yet discussed.

I turn first to *school history* (*Rel*). A large number of children are retarded because of frequent changes from one school system to another. This usually involves an initiation into a new course of study and the use of unfamiliar text books, with a consequent loss of time. Even the transfer from one school to another of the same system is frequently productive of the loss of a grade in the child's progress. The families of some of the children whom I examined had changed their residence at least half a dozen times during the school life of the children. In some cases this change of residence is made by the family, and even by the children alone, to escape the enforcement of compulsory school attendance. A brief summary of the school history of the child is therefore of importance if we are to estimate the influence of this factor in producing retardation. The symbol (*Rel*) is introduced chiefly to remind the investigator to enter a record of attendance in the parochial schools in the case of boys who are members of the Roman Catholic Church. The curriculum of parochial schools, as well as of other church schools, is very poorly articulated with that of the public schools. For this reason children who have attended parochial schools in the early years are apt to be retarded when they subsequently enter the public schools. Moreover, many children spend a year in the parochial school, at about the age of twelve, in order to receive religious instruction. These children lose a whole year of the public school work, and in some cases have lost step with their fellow pupils of the public schools to such an

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extent that they are scarcely able to begin again where they had left off.

A child may be deficient in all his school branches, or he may show himself deficient in but one. If in certain grades this one subject happens to be arithmetic, it may prevent his making normal progress; in other grades it is language that is a great obstacle to progress. For this reason the items *most deficient in* and *best in* are recorded. Statistics obtained from large numbers of children will also throw some light on the question whether mentally deficient children commonly manifest ability and memory for some single line of thought or activity like music, drawing or manual work. It is a common belief, although not supported by sufficient evidence, that the public school system does not appeal to the capabilities of children who are exceptionally gifted in one line and possessed of counterbalancing deficiencies in other lines.

The child whose blank we have taken as an illustration had been only one year in school, and the absence of any record in the appropriate space leads us to believe that his deficiency in progress was manifested in all the work of the school.

Certain habits of life are found to exist among school children, which seriously interfere with their progress. Among these are the use of tobacco and injurious beverages, like tea and coffee and even beer and whiskey. Under *habits* I also recorded the amount and kind of food eaten at one or more meals, but especially at breakfast. Immoral practices are also to be recorded in this connection, but these should not be inquired into in every case. It seemed the better part of discretion to record facts of this kind only when brought to my attention by teacher or principal in those cases where such practices were notorious.

The family life may retard the progress of a child in school, in so far as it affects his health, nutrition, support, his care and discipline. The relation of these factors to retardation was discussed in my last article. In addition to these, a few other items concerning the family appear of sufficient importance to warrant the making of a record. If the child has lost one or both of his parents, the probability is that there has been a reduction in care, nutrition and health, for parents must be presumed to take a deeper interest in the welfare of their children than do relatives or friends. In the case of the father's death the children are often neglected because the mother is unable to bear the burden of support. Many mothers leave home early in the morning to go to work and return late in the evening; the children are left all day

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No. 12 Name John Smith

Grade	Class	190	Address
Grade 1	Class 4	190 7	Address 502 Pearl
School		190	Teacher
School Walnut		190 7	Teacher Miss Adams
Progress	E G F D vD	Date of birth	6/00 Age 7
Conduct	E G F D vD	Age on entering school	6 No. years in school 1
Attendance	vR R I vI A	School history (Rel)	Began at Walnut

Most deficient in

Best in

Habits 1. Coffee + bread & cake 2. Beer 3. Tea

		5	4	3	2	1		5	4	3	2	1
Father living ✓ dead	Normal	vG	G	M	Sl	D	Deficient	BD	ID	IH	IM	Id
Mother living ✓ dead	Health	vG	G	F	P	vP	Home Care	vG	G	F	P	vP
Step-father, Step-mother	Nutrition	F	G	M	F	St	" Culture	vG	G	F	P	vP
Nationality F. Russian	Support	R	W	M	F	vP	" Discipline	vG	G	F	P	vP
" M. Jews	Occupation of provider						Presser					
Birthplace Phila.	Child works at						no					
Lives with Parents												
Home Lang. Yiddish							Anormality				Asymmetry	
Older brothers living 0 dead 0	Trunk						Chest contracted					
" sisters " 0 " 0	Arms											
Younger brothers " 2 " 0	Legs											
" sisters " 0 " 0	Hands											
Eye, R. } 7/10	Feet											
Eye, L. }	Cranium										S.-	
Defects	Forehead										S.-	
Disease	Face											
Ear, R. 70 } 70	Ears						Large & outstanding					
Ear, L. 65 }	Eyes											
Defects	Nose											
Disease	Lips											
Co-ordination 5 4 3 2 1	Palate											
vB Bold Norm Shy vS	Tonsils						enlarged					
Am Resp Pass Sull Sur	Naso-ph'nx						obstructed					
Sto In Al Nerv vN	Mth Breathg											
vR Refl Norm Imp vI	Teeth						v. decayed					
Stu Wilf Firm Flex Vac	Tongue											
Stammer (Inf) 5 4 3 2 1	Voice						muffled					
Stutter 5 4 3 2 1	Speech						nasal					
	Diseases											

Filled in by J. D. Heilman Date June 4, 1907.

Laboratory of Psychology, University of Pennsylvania
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with no one to provide for their wants or to oversee them excepting when at school. The children of many mothers, who are the support of the family, find it difficult to obtain even one good meal a day. When such children are questioned they usually report tea and bread for breakfast and the same for dinner; some children go to school without breakfast. The loss of the mother is also very unfavorable to good home conditions. Her place may be taken by a step-mother, but the phrase "a step-mother's care" has lived long enough in the language of the race to persuade us of its significance. The loss of either father or mother is also an indication of the severity of the struggle for existence on the part of the immediate progenitors of the child, or it may point out a possible lowered resistance to disease.

The blank, therefore, provides for recording whether the child's father and mother are living or dead and whether the child has a step-father or step-mother. There is also a space provided in which to record with whom the child lives. A child may be living with relatives, guardians or acquaintances, who provide it with a home life distinct from that of its own father and mother. Abnormal home conditions are sometimes brought to light which are significant. If the child is asked whether he lives with his parents he will invariably respond in the affirmative, even though he may be living with only one of them. If he is asked, "Do you live with your father and mother?" he will invariably answer, "With my father," or "With my mother," if he is living with but one of them. A record which shows a living father must not be taken to demonstrate the fact that the father is the support of the child or even that the child is living with the father. The blood relations of the child are often in no wise responsible for the child's support and home care.

The language of the child's home may be an important factor in producing retardation in school progress. Some children of foreign parentage are retarded for several years because they are not equipped with a knowledge of the language of the school and many school systems fail to provide for proper instruction in the English vocabulary. Every large city has some sections where the children, even at play, speak a foreign language. The necessary information to estimate the importance of this factor in an individual case is given in connection with the items *nationality F* and *nationality M*, which provide for the record of the nationality of the father and mother, and with *birthplace* and *home language*. When a child is foreign born I found it convenient to inquire as to

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its age at the time of immigration and I sometimes recorded this in connection with the item *birthplace*. Even English-speaking children who come to this country at eleven or more years of age lose at least a year on account of the difference in the curriculum.

The remaining items with which we have to deal are concerned with the child's physical condition. We obtain some indication of the child's physical vigor, vitality and viability when we know the number of brothers and sisters living and dead. It is very difficult to ask a child or even an adult the necessary questions in such a manner as to elicit exact information of the character we desire. The blank records data in a way that appears to present the question in the best possible form for answer. A numeral records the number of *older brothers living* and *dead*, the number of *older sisters living* and *dead*, the number of *younger brothers living* and *dead* and the number of *younger sisters living* and *dead*. The boy whose blank we have taken as an illustration has two younger brothers, both of whom are living. The information obtained from these items is very meagre. We know only that he is the first child. According to some authorities, the first child is more apt to suffer from accidents of birth than later children. A physician interested primarily in the child's physical history would want to know very much more in this connection than is provided for by the blank. For example, he would require a history of miscarriages. No matter how valuable such data may be, it would be undesirable to make an effort to obtain them. It is only when children are brought for examination to a clinic by father or mother that such facts can be ascertained. Discretion as well as the limitation of time render it necessary to omit many other items, for example, the birthplace and condition of the grandparents. The blank probably provides for as many items in this connection as it is wise and convenient to endeavor to obtain.

The purposes of the blank must be borne in mind when we examine the remaining items which deal with the physical condition of the child. Space is provided for an entry of the results of a brief examination of eyesight and hearing and for the record of marked *anormalities* or *asymmetries* of the *trunk, arms, legs, hands, feet, cranium, forehead, face, ears, eyes, nose* and *lips*. Space is also provided for a record of anormalities that are often associated with naso-pharyngeal obstruction,—leading in some cases to a diagnosis of adenoids. Thus, the condition of the *palate* is to be observed, the *tonsils*, the *naso-pharynx*, the *teeth*, the *tongue*. If *mouth breathing* exists, it is to be recorded; the *voice* is to be

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observed for symptoms of adenoids and the quality of *speech* is to be recorded for the same purpose. Finally, a brief record is to be made of the *diseases* from which the child has suffered during infancy and childhood. The examination from which this record will be filled out is superficial and is directed only to the ascertainment of striking defects. Time is wanting, nor is it practicable to subject a child to an extensive physical examination. A child ought not to be touched nor can many instruments be used to facilitate the work of the examination. A medical inspector may perhaps use a tongue depresser, but experience in some cities has shown that even they had better employ some such common article as a spoon for the purpose. The tests which I employed excited no criticism, excepting in the case of one child who refused to take part in the test of hearing, for which I employed an instrument. I feel that I went as far as it is wise for any one, excepting a medical man, to go, and that even the medical inspector could not take much more advanced measures without awakening a storm of criticism. From the standpoint of medical inspection, such results as I obtained with this blank must necessarily be unsatisfactory, but this same criticism holds good also of much of the medical inspection that is made in the schools to-day, excepting in so far as it relates to the discovery of contagious diseases and parasites.

From the nature of my investigation it was impossible to make anything like a thorough examination of sight and hearing. The limitations of time and the lack of proper rooms and instruments practically confined my work to a hasty test of the child's ability to see and hear. To examine eyesight, I employed Snellen's test cards, both the alphabet and illiterate types, the latter for children who did not know the alphabet. Where the child's familiarity with the alphabet was in doubt, a brief preliminary drill was employed to determine whether the inability to read the line was due to ignorance or defective vision. None of the children examined by me were under ten years of age, and I seldom was compelled to resort to the illiterate card.

On account of the dimensions of most of the rooms in which I tested the eyesight of the children, I was obliged to make use of the ten-foot line. In making my tests, I placed the cards so that the ten-foot line was about level with the eyes and squarely in front of the child. I placed it so as to be in a good light and to avoid strong reflections. If the child wore glasses, I tested him with and without them. Both eyes were tested together and each

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separately. During the test I always looked at the child to be certain that when one eye was tested the other was covered and to observe excessive hesitation and signs of eye-strain. In cases of strain and marked hesitation, the child was asked to move toward the cards until the letters on the line were read easily. Before beginning the test, I laid off a ten-foot range, which I subdivided into feet. When, therefore, the child moved from a distance of ten feet to a shorter distance I was able at once to note the distance in feet at which he read the line. The blank on page 260 shows that John Smith read the ten-foot line at a distance of seven feet with both eyes, and the ditto marks opposite *eye R* and *eye L* show that with each eye separately he read the line at the same distance. His sight is therefore sufficiently defective to justify the recommendation that his eyes be examined by an oculist.

Various tests are employed to measure the acuity of hearing. All of these fall into one or the other of two classes; the first is a speech test, and the second is a test with mechanical sounds. The speech may be either whispered or conversational. Undoubtedly the test which employs conversational speech is of the greatest value, for it tests the child's ability to hear conversation, upon which depends his apprehension of oral instruction in the school room. A conversation test, however, is objectionable because it requires a very large room. To avoid this difficulty the whisper test is usually employed as a substitute. Both speech tests are open to the practical objection that the intensity of the sound cannot be kept constant. Moreover, much time is required to carry out the tests satisfactorily, and the results vary with the acoustic properties of different rooms, depending upon their size and shape and upon convection currents due to the unequal heating of the air. Similar objections may be offered to the employment of mechanical sounds for testing hearing. The watch, the Politzer acoumeter, tuning forks, and specially constructed audiometers, are the instruments usually employed. No instrument has yet been devised which furnishes a constant and accurately measured standard of sound intensity. In my tests I employed an audiometer which is to be recommended, not as an instrument of precision, but as a convenience for rapid testing.

This audiometer consists of a box, six inches by seven inches by eleven inches, divided by a partition into two parts. In one compartment of the box is placed a small clock as the source of sound. The other compartment contains a specially contrived stop-cock connected with a metal tube, which at one end divides

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into two branches for conducting the sound impulses to each of the two ears. These two branches project about an inch beyond the box. To these, when the instrument is to be used, rubber tubes are attached, which connect with the ear-piece of a binaural stethoscope. The stop-cock which regulates the size of the opening through which the sound is allowed to pass, is connected with an index finger moving over a graduated disk, arbitrarily divided into one hundred divisions. When the index finger points to the zero mark, the tube is open to its fullest extent. When it points to one hundred, it is entirely closed. The least audible sound for most normal ears is obtained with the index finger at the mark 92. The instrument is provided with two other stop-cocks, one on each of the two branches of the tube. These are to shut off the sound instantaneously from one of the two ears and without the subject's knowledge. The advantages of this audiometer are found in the convenient variation of the intensity of the sound and its measurement with some accuracy on an arbitrary scale, and in the ease with which the sound can be shut off from one or both ears so as to test the reliability of the subject's responses. With this instrument the child whose hearing capacity is measured by 70 for the right ear and by 65 for the left ear (see blank on page 260) has subnormal hearing in both ears, the left being slightly more defective than the right. This record, especially when taken in connection with facts which give rise to the suspicion of adenoids, is sufficient to warrant his being referred to the medical inspector or to a medical clinic for the nose, ear and throat, for examination and treatment.

Spaces are provided for the record of *disease* and *defects* of the organs of sight and hearing. It is intended that only those diseases and defects shall be recorded which attract attention on superficial examination. These include sore and inflamed eyes, strabismus, nystagmus, certain readily observed defects of pupil and iris, a running ear or a perforated ear drum.

Ample space is provided to record marked *anormalities* and *asymmetries* of bodily members and their functions. It is impossible in this article to attempt a statement of the various physical anormalities and asymmetries that may be reported under this heading. Defects may be recorded for their own sake, or because they have diagnostic value as symptoms or stigmata of degeneration and arrested development. The reader must be referred to the copious literature on this subject for information as to the particular defects which may be considered worthy of being recorded. What will be recorded will depend very largely

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upon the extent of the information possessed by the investigator, on the purposes of the investigation, and on the interest which the investigator may take in the association of physical defects with retardation. I made no attempt at a thorough examination or record of minute deviations of different parts of the body from the normal type, whether in structure or function. My record of the boy whose card I have taken for an illustration shows the cranium and forehead to be smaller on the right side than on the left. It is also reported that the ears are large and outstanding. All the other items recorded have a significance in connection with the diagnosis of naso-pharyngeal obstruction. The chest is reported to be contracted, the tonsils enlarged, the voice muffled, and the speech nasal. He is also reported to have badly decayed teeth, which are frequently found associated with enlarged tonsils and adenoids.

The last item on the blank to be considered is *diseases*. These include measles, chicken pox, mumps, scarlet fever, diphtheria, whooping cough, meningitis, and convulsions. On the card reported above, no diseases are recorded. This was the case with very many cards. It does not mean, necessarily, freedom from disease during infancy, but perhaps only lack of information. It is difficult, if not impossible, to extract satisfactory information from the child, and I believe that physicians encounter the same difficulty in obtaining accurate information even from the parents. It must be borne in mind that an investigation such as I conducted can only endeavor to obtain the fullest and most exact information possible under the circumstances.

We are now prepared from examination of the record of Jonh Smith to make a tentative statement of the causes of his very deficient progress in school work. He is seven years of age and has been in attendance at school one year. There is no evidence to be had from the blank that deficient progress is due to inefficient instruction, nor can it be ascribed to delay in entering school, or to irregularity in attendance. He is the child of Russian Jews who speak Yiddish at home. This may be responsible to some extent for his inability to progress at school, but it must be remembered that the child was born in this country, and other Russian Jewish children under similar circumstances are progressing normally in school work. It is rather to the naso-pharyngeal obstruction, the result of poor nutrition, due to insufficient support at home and deficient home care, that I would attribute his retardation in school work. The nasal speech, the muffled

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voice, the enlarged tonsils, the contracted chest, the subnormal acuity of hearing, his nervousness, and even his vacillating will, are a group of phenomena which suggest adenoids. Adenoids are merely an enlargement or hypertrophy of lymphatic tissue in the naso-pharynx. They may be due to the very decayed teeth, which act as a source of infection to the tonsils and adenoid tissues. The naso-pharyngeal obstruction and the decayed teeth may both result from the insufficient nutrition, the presence of which is attested by the customary breakfast of coffee, bread and cake.

The remedies to be suggested in this case are partly medical and partly social. He should be referred to the medical inspector and taken by his parents or a school nurse to a clinic for nose and throat diseases for examination and treatment. The insufficient nutrition may be due to the impoverished condition of his parents, or to ignorance. The solution and treatment of this problem must be left to the various social and philanthropic agencies, which in our large cities are beginning to attack the problem with determination and scientific insight.

NEWS AND COMMENT.

In a statement of the Commissioner of Education for the fiscal year ended June 30, 1907, and issued September 14, 1907, occurs the following paragraph of great interest to those who are studying the pedagogical retardation of school children throughout the United States:

"An inquiry into the places where the help of this Office is most needed has brought to notice the fact that one of the great weaknesses of our educational system is in the matter of school attendance, and further inquiry shows that the question of school attendance is closely bound up with questions of child labor, of hygiene and sanitation, in school and out, of parental neglect in many forms, and with others of the same general group of questions. It is clear that educational improvement is conditioned upon many things affecting the general welfare of children, and that this Office should do much to diffuse information and spread a wholesome influence touching these things. To this end the appointment of a highly competent specialist in the welfare of children is desired and recommended."

Investigations made in the Philadelphia schools last year by Dr. Wessels, a medical inspector working under the Bureau of Health, showed that many children were retarded in school progress because

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of eye strain or other eye troubles which could have been easily corrected by glasses. A large number of these children, however, were too poor to pay for glasses, even of the cheapest make. Some of them were provided with glasses by the School Nurse, from a fund collected for that object by the Visiting Nurse Society. A long step in the direction of relieving many other children whose eyes are defective, has recently been taken by Dr. Joseph S. Neff, Director of Public Health and Charities, who obtained an appropriation of three hundred dollars from City Councils to purchase glasses. The prescriptions will be filled by a local optician, and the words "Bureau of Health" will be stamped in the frames of the glasses, for identification in case they should be lost or stolen.

On Dr. Neff's urgent recommendation Councils further created the position of school ophthalmologist, to which Dr. L. C. Wessels has been appointed. Dr. Neff also urged the creation of a department of school nurses and the appointment of a neurologist, to serve in connection with the medical inspectors in the examination of backward children who are mentally defective. This department of school nurses has been organized through appropriations made by Councils to the Board of Education. It was not possible, however, to secure the appointment of a neurologist for the current year. The expenditure of the amounts appropriated for the year 1908, and the administration of the various departments under Dr. Neff's direction, will not only help the school children of Philadelphia directly, but will serve to educate public opinion and show the necessity for a more generous appropriation for another year.

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Vol. I, No. 9. February 15, 1908

THE PSYCHOLOGICAL CLINIC

A Journal for the Study and Treatment of Mental Retardation and Deviation

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THE PSYCHOLOGICAL CLINIC PRESS
COLLEGE HALL, WOODLAND AVE. AND 36th ST.,
WEST PHILADELPHIA STATION, PHILADELPHIA, PA.

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A Journal for the Study and Treatment of Mental Retardation and Deviation

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